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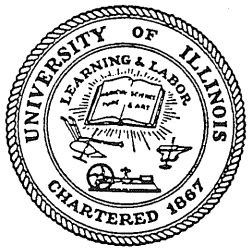

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THE 1985 CHILE EARTHQUAKE

STRUCTURAL CHARACTERISTICS AND DAMAGE STATISTICS FOR THE BUILDING INVENTORY IN VIÑA DEL MAR

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A Report to the
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16. Abstract (Limit: 200 words)

The Chile earthquake of 3 March 1985 resulted in an effective peak acceleration of 0.36g in the coastal city of Viña del Mar. The city had an inventory of over 400 reinforced concrete buildings ranging in height from 5 to 23 stories. The observed behavior of the buildings is interpreted in relation to the physical characteristics of the structural systems.

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CHAPTER 1

INTRODUCTION

A strong earthquake occurred at 7:47 p.m. (local time) on March 3, 1985 off the coast of Chile [16]. The earthquake, with a magnitude $M_s = 7.8$, caused serious damage and casualties in the central portion of Chile. Damage to port facilities, lifelines, bridges, and dwellings was officially estimated at two billion U.S. dollars. From the viewpoint of structural engineering, one of the most important features of this earthquake was the quite satisfactory behavior of a sizeable collection of multistory, reinforced concrete buildings in the city of Viña del Mar.

1.1 Object and Scope

At the time of the earthquake, more than 400 reinforced concrete buildings having five or more stories were located in the city of Viña del Mar. Aside from the concentration of damage in the Canal Beagle housing complex, only a few buildings were seriously damaged in Viña del Mar. Most buildings had superficial or no damage. The Canal Beagle case is unique because damage seems to be the result of a particular ground motion amplification condition [8].

The set of buildings in Viña del Mar (referred to as the Viña del Mar inventory in this report) provides a unique opportunity for evaluating the methods of analysis and design of buildings to resist earthquake motions. This is the general objective of a research project conducted as a joint effort by the Pontificia Universidad Católica de Chile, the University of California at Berkeley, the University of Illinois at Urbana-Champaign, and the University of Michigan. The cooperative research project is sponsored by the U.S. National Science Foundation.

As a part of this project, an overall statistical survey of the Viña del Mar building inventory was conducted. The purpose of this survey was twofold: (a) to define the typical characteristics of medium-rise construction, buildings having five to twenty-three stories, in Viña del Mar, and (b) to describe the nature and distribution of damage in Viña del Mar. The results of this survey are presented in this report.

Chapter 2 presents background information on the economic history of Chile and its relationship to and impact on the construction industry. The structural characteristics of the Viña del Mar inventory are presented in Chapter 3; in particular data on times of construction, building heights, foundations, and framing types are given. Chapter 4 summarizes typical structural members and details used in reinforced concrete construction. Chapter 5 presents information on observed damage in Viña del Mar, and concluding remarks are presented in Chapter 6.

This report and Reference 20 are complementary in covering general aspects of the March 3, 1985 Chile Earthquake. The mentioned reference provides general information on seismicity and geology in the Viña del Mar region, codes for earthquake resistance and properties of construction materials in Chile, and ground motion records obtained during the earthquake.

1.2 Acknowledgments

The Universidad Católica de Chile group was responsible for data collection in Chile and initial processing of the information. Participants at the Universidad Católica de Chile and the University of Illinois were responsible for the development of statistical conclusions and preparation of this report. Opinions and conclusions presented in this report are those of the writers, and they are not necessarily endorsed by the named institutions, or by the National Science Foundation.

The writers wish to thank the Alcaldesa of Viña del Mar, Maria Eugenia Garrido de Alvarez, for her cooperation and permission to have free access to information available at the Municipality. Thanks are also extended to Hector Balbontin, Director of Dirección de Planificación Urbana of the Municipality who gave all the support of his office, which acted as a link for transferring the information.

The writers are indebted to engineer Carlos Arratia of the Dirección de Planificación Urbana who supervised the survey of the Municipality files to compile the data sheets for each building and for checking the accuracy of the data.

The following Chilean undergraduate engineering students are thanked for organizing the data, for their care in making reduced copies of building drawings, and for their efforts to produce legible drawings from deteriorated originals: Antonio Nuñez, Rodrigo Brito, and Juan Eduardo Grunwald. Thanks are also extended to engineering student, Carlos Brizuela for his help in surveying the Municipality records to extract building information.

The joint research project is sponsored by NSF grant ECE 86-03789 at the University of Illinois, a subcontract of which supports the work done at the Universidad Católica de Chile, with parallel grants at the Universities of California (Berkeley) and Michigan (Ann Arbor). Coordination of the project is provided by Mete A. Sozen, Professor of Civil Engineering, at the University of Illinois.

CHAPTER 2

CONSTRUCTION INDUSTRY IN CHILE

Construction in Chile shows a fluctuating trend following the unstable conditions of the Chilean economy. A brief view into the economic history of the country is presented as a background for the information on building materials production and construction statistics for Chile and the city of Viña del Mar.

2.1 Economic History of Chile

Chile was discovered by the Spanish in 1535. Until independence in 1810, the economy of the country was characterized by the extreme regulations imposed by the colonial government. Chile was restricted to trading only with Spain and the Spanish colonies, and manufacturing was discouraged. From the beginning, Chilean exports consisted mainly of mining products: gold and silver in the sixteenth century, and copper since the eighteenth [4].

After independence was established and public administration organized in the 1820's, Chile entered a period of great expansion and development which continued until 1930. As a reaction to previous restrictions, Chile moved toward a liberal economic regime, and by 1930 an impressive growth in foreign trade had developed. In turn, agriculture was prosperous and a stable, although moderate, food surplus was generated.

Progress between the 1820's and 1930 was continuous as indicated by several indices, such as the per capita product, life expectancy, and level of education. The economy, however, was very dependent on one or two export products. Before 1880, Chilean exports were mainly copper and wheat. After 1880, export trade shifted almost entirely to nitrate mining, until 1910 when

the copper sector was revived. It is also worth noting that after 1880, ownership of the major mines moved primarily to foreign hands.

The Great Depression of the early 1930's threw the country into one of the worst economic crises of its history. The vulnerability associated with Chile's extensive dependence on the foreign sector became apparent. The collapse of international demand for Chile's mineral products spread poverty and unemployment throughout the country. In only four years, the per capita income decreased by nearly one-half.

The impact of the depression led to radical changes in the economic policies. The basic strategy for recovery was the restriction of imports, thereby creating favorable conditions for the development of a Chilean manufacturing industry to satisfy the internal demand. The severe restrictions on imports stimulated investments in the industrial sector. As a result the participation of the manufacturing industry in the Gross Domestic Product (GDP) increased from 15% in 1940 to 25% in 1970 [19].

In contrast, the contribution of agriculture to the GDP decreased from 15% to 8%, and mining went from 20% to 10%, in the 1940-1970 period. During the same period, the construction sector maintained an average of 5% of the GDP; however, there were some important fluctuations [19].

The net impact of the import-substitution plan on the growth of the country appears to have been negative. While other sectors of the economy stagnated, the overprotected manufacturing sector became inefficient and did not react to technological developments. As a result, the manufacturing sector was unable to compete in the international market after the relatively small domestic market was saturated.

Although attempts to liberalize the economy by relaxing the restrictions on imports took place in 1956-58, in 1959-61, and in the late 1960's, none was completed. Basically, the economic strategy developed in 1930 was

maintained for more than forty years, during which time the participation of the government in production, price controls, and protectionism continued to grow. Periodic devaluations occurred as imposed by economic circumstances; however, the typically high rate of inflation would quickly reverse the situation to its previous state. This cyclic pattern reflected an intrinsically unstable economic system that did not offer attractive conditions for investments or capital growth.

During this period between 1940 and 1970, the Chilean economy remained dependent upon one export product: copper. Prosperous periods in the country coincided with rises in the price of copper. However, the price of the metal depended on external conditions which could not be controlled by the Chileans.

As a result, the development of the Chilean economy after the 1930's has been low with respect to its potential. During the period between 1941 and 1980, for which statistics are complete, the equivalent annual rate of growth of the GDP was a moderate 3.7% (Fig. 2.1 and line 1 in Table 2.1) [13,14]. It can be seen that periods of high growth occurred sporadically, and large drops followed each peak.

A radical change in economic policy took place in 1974 when a program began for the rapid establishment of a free-market economy. Prices were decontrolled, government participation in production was reduced, exchange controls relaxed, import duties were lowered, exports were stimulated, selective protectionism was eliminated, and new legislature was devised to attract foreign investment to Chile [9]. The implementation of the policy required great sacrifices to the people, especially because of the critical state of the Chilean economy in 1973, and the international economic difficulties arising from the oil crisis in 1974-75. Positive effects on the

growth rate may be observed in the late 1970's (Fig. 2.1), but a new recession took place in 1983-84.

2.2 Construction Statistics in Chile

During the 20-year period beginning in 1943, the contribution of the construction industry to the Gross Domestic Product (CGDP) tripled, while the total GDP increased only by a factor of 2.25. In the following ten years, the CGDP remained approximately constant and decreased between 1974 and 1977 (Fig. 2.2 and line 2 in Table 2.1).

As indicated in Fig. 2.3, the share of the construction sector in the total GDP (CGDP) averaged approximately 5% for the 1940-80 period, but it experienced a downward trend during the last part of this period (line 4 in Table 2.1). The unstable economic conditions for the development of the construction industry are reflected by the abrupt changes of the annual growth rate of the CGDP as shown in Fig. 2.3 (line 3 in Table 2.1).

A point of reference for evaluating the extent of damage caused by the March 3, 1985 earthquake is provided by the following statistics: the total GDP of Chile in 1984 was 20.9 billion U.S. dollars, and the official estimate of the loss due to the earthquake was 2 billion dollars. Thus, the damage amounted to almost 10% of the total GDP, or twice the annual production of the construction sector (CGDP).

Statistics for total building construction, including buildings used for housing, industry and commerce, and services, are shown in Fig. 2.4 for the period of 1940 to 1985 (line 5 in Table 2.1) [17]. Data are also separated into construction associated with the public and private sector for the period of 1950 to 1985 (lines 6 and 7 in Table 2.1). The public sector data are shown in Fig. 2.4, and the difference between the two curves corresponds to the private sector construction.

The public sector construction corresponds primarily to low-cost housing financed by the government for low-income families. The system, which was effective until 1977, was characterized by direct involvement of the government in the development and management of housing projects. The government then gave low-interest loans to the people to acquire the dwellings. By 1977 the system was replaced with a subsidy granted directly to the qualifying people, that was used to buy a dwelling of their choice.

It must be noted that the private sector data are based on construction permits issued in selected municipalities of the country. The number of municipalities considered in the statistics has varied in time; since 1975 the sample is representative of about 90% of the private construction in Chile.

The spatial distribution of construction in Chile is also of interest. The country is divided in twelve regions from north to south plus the Metropolitan Area of Santiago. The cities of Viña del Mar and Valparaíso are located in the Fifth region. Population is largely concentrated in the central part of the country. The population of the Metropolitan Area plus that of the Fifth region corresponds to almost one-half of the total population of the country. An important fraction of the total construction in the country is also concentrated in these two areas (Fig. 2.5). For example, combined construction in both areas reached 76% of the total constructed area in 1981 and 57% in 1984.

Most building construction in Chile is low-rise. Statistics for 1984 indicate that 90% of the total constructed area corresponded to one and two-story buildings, while buildings having nine or more stories contributed only 1% of the total area. The distribution of constructed area versus number of stories for 1984 is shown in Fig. 2.6.

A large proportion of dwelling units have an area smaller than 70 m^2 (750 ft^2). The distribution of constructed area for housing as a function of the plan area of the building is shown in Fig. 2.7 for 1984.

2.3 Construction Materials

Statistics regarding the materials used for construction in Chile are not precise because two or more materials are often combined in one building. An attempt was made to group the data for 1984 according to the principal materials used for the structural framing system of the building. The results for that year indicate that the leading material is brick masonry, followed by timber and reinforced concrete. The first two are the most common for one or two-story dwellings which account for a large share of the buildings in Chile. The percentage of constructed area built with various construction materials in 1984 is presented in Fig. 2.8.

The most common roofing materials are asbestos-cement products and galvanized steel sheets. In 1984, corrugated asbestos-cement roofing material was used in 61% of the buildings constructed in Chile. In the same year, galvanized steel was used in about 30% of the construction projects. Data for roofing materials used in 1984 are shown in Fig. 2.9.

Statistics of Chilean production of the basic construction materials (steel and cement) also show variations associated with the economic conditions of the country (Fig. 2.10, lines 8 and 9 in Table 2.1). However, deficits or surplus can be handled by import or exports. Steel production in Chile is normally above the domestic needs for construction, and the surplus is exported, except in boom construction years when reinforcing steel must be imported.

2.4 Construction Statistics for Viña del Mar

To the best of knowledge of the writers, official construction statistics on the volume of construction per year are not available for Viña del Mar. From the data collected from the Municipality records for this project, the statistics for reinforced concrete buildings with 5 or more stories were compiled (line 10 in Table 2.1). These data, as well as other characteristics of building construction in Viña del Mar, are presented and discussed in more detail in the next chapter.

It is apparent that the construction activity in Viña has experienced large variations in time, reflecting the unstable conditions for the construction industry in Chile discussed in this chapter.

CHAPTER 3

CONSTRUCTION STATISTICS FOR VIÑA DEL MAR

The general characteristics of the building inventory in Viña del Mar are described in this chapter. The Municipality does not keep explicit records of construction within the city limits; however, files containing the project documents submitted in support of the construction permit for all buildings having five or more stories are maintained. The information presented in this chapter was obtained by searching through individual files at the Municipality. Unfortunately, the information available for some buildings is incomplete, and some files were destroyed during a flood in 1984.

3.1 Building Inventory

The term "building inventory" refers to the set of reinforced concrete buildings in Viña del Mar having five or more stories. A list of the 415 buildings located in Viña del Mar at the time of the 1985 earthquake is presented in Table 3.1. The buildings listed in Table 3.1 are arranged by the number of stories and building height, except for the last three buildings for which information was obtained after the organization of the data was completed.

Data sheets were compiled for 178 different buildings, which represents 322 individual structures*. The data sheets are presented in Appendix A, and contain basic information such as number of stories, height, constructed area, concrete and steel quality, structural framing system, type of foundation, type of partitions, allowable soil pressure, and a photograph of the building. The dates of construction of the buildings were not available.

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* Construction projects comprising a number of identical buildings were common in Viña del Mar. The number of buildings in the project is noted on the data sheets.

However, three typical dates were often found in the files: the date of structural design, the date that the construction permit was issued, and the date of final acceptance (the date that the structure was accepted by the Municipality). Also included on the data sheet is the level of damage observed in the building following the March 3, 1985 earthquake. The extent of damage and correlations between building characteristics and level of damage will be discussed in Chapter 5.

The first column of Table 3.1 contains the data sheet number for the building. No information was available on the buildings that are listed without data sheet numbers. The buildings are listed in alphabetical order in Appendix B.

Structural or architectural drawings were obtained for approximately 70% of the 178 buildings for which data sheets were complied. Reduced-scale copies of these drawings are presented in Volume II of this report**. Although some of the original drawings were not in good condition and some information was lost in the reduction process, it is believed that the set of drawings is valuable because it represents the most complete documentation available of the Viña del Mar inventory. A review of the drawings permits a quick view of the general characteristics and structural configuration of the buildings. The drawings were also used to compute some indices that will be discussed in Sections 3.4 and 5.5. Column 7 of Table 3.1 identifies the buildings for which drawings were obtained.

** Volume II may be purchased for the cost of reproduction from the Department of Civil Engineering, University of Illinois, Urbana, Illinois, 61801.

3.2 Time of Construction

The information contained in the data sheets was used to determine the general trends in the construction industry in Viña del Mar during the period from 1950 to 1984 (Fig. 3.1 and line 10 of Table 2.1). These data do not represent the total volume of construction because low-rise buildings were not considered and construction dates were available for only 315 of the 415 buildings with five or more stories. However, the trends observed in Fig. 3.1 may be considered representative of the total construction activity. It can be seen that most construction occurred during two periods: 1960-65 and 1977-82. This irregularity in the number of buildings constructed annually reflects the strong correlation between construction activity and the economic conditions of the country.

The cumulative volume of construction is shown in Fig. 3.2, and Fig. 3.3 shows the number of buildings constructed per year. Approximately 40% of the structures, representing 45% of the constructed area, in Viña del Mar were built before 1974.

3.3 Distribution of Buildings with Respect to Height

Information from the complete building inventory (415 buildings) was used to construct the frequency diagram indicating the number of buildings with the same number of stories (Fig. 3.4). Approximately 45% of the building inventory consists of five-story buildings, and buildings in the range of five to ten stories represent nearly 90% of the inventory. Structures of twenty or more stories account for less than 3% of the number of buildings in Viña del Mar.

The dates of construction for 315 buildings are included in the frequency diagram shown in Fig. 3.5. Construction activity was divided into three periods: 1950-1959, 1960-1972, and 1974-1984. Approximately 60% of the buildings were constructed during the 1974-1984 time frame, including all

buildings having more than 15 stories. Before 1960, buildings in Viña del Mar did not exceed twelve stories in height.

Data presented in Fig. 3.1, 3.2, and 3.3 are redrawn in Fig. 3.6, 3.7, and 3.8, respectively, to include information about the height of the buildings. During the most recent period of peak construction, 1978-1982, tall buildings (16-23 stories) represented nearly 40% of the constructed area; however, they comprised less than 15% of the number of buildings constructed. Low-rise structures (5-10 stories) also represented 40% of the constructed area and constituted 75% of the structures built during this period.

Construction of the Canal Beagle subdivision accounts for 94% of the five-story buildings constructed in 1974 and 1977. Severe damage was observed at this location after the 1985 earthquake, and will be described in Chapter 5.

3.4 Structural Configuration and Foundations

Shear walls constitute the most common structural alternative in the Viña del Mar inventory. Of the 172 buildings for which data are available, only three (Arcadia, Eurosol, and Nuevo Centro 2) may be classified as moment resisting frames. All buildings of five or more stories in Viña del Mar were constructed from reinforced concrete.

The structural characteristics of the Viña del Mar inventory are discussed in this section. All statistics presented in this section are based on available information for the 178 different structural configurations described in Appendix A. The number of identical buildings was not considered.

3.4.1 Foundations

The soil conditions in the downtown area of Viña del Mar, where most of the tall buildings are located, are generally good and there were no indications of soil failure during the 1985 earthquake. The typical subsoil

characteristics in this region are a 25 to 35-m stratum of medium-grained fluvial sand over a silty-sand (marine) stratum which extends down to the bedrock, approximately 100 m below grade. It is believed that the silty-sand stratum is highly compacted; however, it has never been explored [15]. The water table is between -3 and -5 m. Tall buildings are usually founded 4 or 5 m below grade. More information on geotechnical characteristics of the Viña del Mar area is given in Reference 20.

Four general types of foundations have been used in Viña del Mar: mat foundations, continuous footings, individual footings, and piles. Mat foundations are most common for tall buildings and were used in nearly 60% of the buildings with ten or more stories. Continuous footings are more common in the lower-rise structures, and were used in 56% of the total inventory. Pile foundations are the least common, representing less than 2% of the buildings.

3.4.2 Construction Materials

The quality of materials specified for the Viña del Mar buildings was uniform. Typically, the Chilean concrete classes D and E were specified; these have 28-day cube strengths of 225 and 300 kg/cm^2, respectively, which correspond to cylinder strengths, f'_c, of 190 and 255 kg/cm^2 (2700 and 3600 psi).

Two steel grades are typically used for buildings: A44-28H and A63-42H. The numbers in this notation indicate the tensile strength and yield stress for the material. A44-28H corresponds to steel with a tensile strength of 4400 kg/cm^2 (63 ksi) and a yield stress of 2800 kg/cm^2 (40 ksi), and A63-42H corresponds to steel with a tensile strength of 6300 kg/cm^2 (90 ksi) and a yield stress of 4200 kg/cm^2 (60 ksi). An intermediate grade steel, A56-35H, was also used in the early 1960's.

3.4.3 Structural Characteristics

A peculiar characteristic of the Chilean buildings is the relatively large amount of wall area. An interesting index is the ratio of the total cross-sectional area of the walls at one level to the floor area. Figure 3.9 shows a histogram of the number of buildings with respect to the wall area to floor area index. It can be seen that for most buildings this index ranged from 3 to 8%. To investigate the variation in percent wall area with respect to the height of the building, average values are presented in Fig. 3.10. The amount of wall area appears to be nearly independent of the height of the building, with an average value of 6%. This ratio is slightly lower in the buildings having 5 to 8 stories. The distribution of the data presented in Fig. 3.10, is skewed, because the number of buildings is not represented explicitly. For example, the single seventeen-story building, Torres del Pacifico, was designed with nearly 10% of the floor area occupied with walls, but this is not a general statement about taller buildings.

A measure of the design shear stress may be obtained by dividing the total weight of the building above certain level by the available wall area in one direction at that level. Figure 3.11 shows a histogram of the number of buildings as a function of the average shear stress index, I_2. Most buildings have a value of I_2 less than 50 kg/cm^2 (700 psi). Average values of I_2 are plotted as a function of the number of stories in Fig. 3.12. The average stress values tend to increase with the number of stories.

If one considers a seismic design base shear of 10% of the weight of the building, the weight to wall area index indicates that most buildings have been designed for an average shear stress less than 5 kg/cm^2 (70 psi). Shear stresses are kept at a relatively low level according to this design philosophy.

Figure 3.13 provides an indication of the symmetric nature of the structural configurations used in buildings in Viña del Mar. The axes of the plot correspond to the amount of wall area, expressed as a percentage of floor area, in orthogonal directions. All data were arranged such that the horizontal axis in Fig. 3.13 represented the direction with the larger percentage of wall area. In 70% of the 147 building configurations considered, the ratio of wall area in the orthogonal directions was less than 1.5, and the ratio was less than 2.0 for 90% of the buildings.

The average unit dead weight for several buildings was found to be 1000 kg/m^2 (205 lb/ft^2). This figure is believed to be valid for most Chilean buildings.

Slab thicknesses range from 12 cm (4.7 in.) for spans of about 4 m (13 ft) to 20 cm (8 in.) for spans between 6 and 8 m (20 to 26 ft). Typically, the slabs are supported by beams or directly by the walls. Beam depths are normally about 40-50 cm (16-20 in.). The beams are often used for coupling of the wall elements, thus, the beam width is typically equal to the wall thickness.

CHAPTER 4

STRUCTURAL DETAILS IN REINFORCED CONCRETE BUILDINGS

As indicated in Chapter 3, a typical reinforced concrete building in Chile contains a large number of walls. Also, the structural elements have moderate amounts of reinforcement and simple details. A brief description of Chilean practice regarding reinforcement ratios and detailing is presented in this chapter.

4.1 Code Background

The current Chilean Code for reinforced concrete design, NCh 429 and NCh 430, [12] is based on the 1952 and 1959 versions of the German DIN 1045 standard [5].

The Chilean Code for reinforced concrete does not contain provisions for seismic design and, in particular, it does not include special detailing requirements for producing a ductile structure. For this reason, Chilean engineers often use Appendix A of the ACI Code [6] to design frame buildings. However, provisions for ductility are seldom used for shear wall structures, which are more common.

The ACI Code is also used as a general reference for reinforced concrete construction, its use is not limited to Appendix A. Following the opinion of the professional and academic community, the ACI Code has been selected as a model document for the new Chilean reinforced concrete code which is currently being prepared by a committee. In spite of the popularity of the ACI Code, it must be pointed out that Chilean engineers do not necessarily follow ACI completely. Engineers typically look at other sources [10] and rely on their own experience and judgment.

It must be also mentioned that the current Chilean reinforced concrete code is one based on "working stresses."

4.2 Beam Details

NCH 429 does not contain minimum transverse reinforcement requirements. However, shear reinforcement is required where the maximum shear stress for service loads exceeds 7 and 8 kg/cm^2 for concrete classes D and E respectively which corresponds to 1.9 $\sqrt{f'_c}$ where f'_c is in psi. For static loads combined with seismic loads the previous limits change to 8 and 9 kg/cm^2 (2.2 $\sqrt{f'_c}$).

Vertical stirrups and diagonal bars may be used for shear reinforcement. The diagonal reinforcement is attained by bending some of the positive moment reforcing bars that are no longer needed for flexural capacity. The bent bar is then extended and may contribute to take negative moment. Figure 4.1 shows a detail of a beam of the Torres del Sol building which was constructed in 1981.

The code indicates that bent bars are preferable for shear resistance and limits are placed on the amount of shear that can be carried by the stirrups. Recently, however, there seems to be a tendency toward the use of vertical stirrups instead of bent bars because the later are not efficient under load reversals.

The Chilean Code also specifies that stirrups shall be spaced at a distance not exceeding 30 cm, the width of the beam, or one half of the total depth of the beam.

No limits are placed on the amount of longitudinal reinforcement in flexural elements.

4.3 Column Details

The minimum longitudinal reinforcement ratio for columns is 0.8%, and the reinforcement ratio may not exceed 6%. The diameter of the longitudinal reinforcing bars is not permitted to be less than 12 mm.

There is no specification regarding transverse reinforcement ratios. The spacing of hoops must be less than twelve times the diameter of the longitudinal bars.

NCH 430 limits the volumetric ratio of spiral reinforcement to 3%, independent of the concrete or steel quality. The spiral spacing may not exceed one-fifth the diameter of the core or 8 cm. The percentage of longitudinal reinforcement in spiral columns must be between 1% and 6% of the core area.

4.4 Wall Details

NCH 430 specifies that the thickness of a wall must be more than 1/25 times the distance between lateral supports measured vertically or horizontally, and may not be less than 20 cm. The minimum thickness may be reduced to 15 cm on the top 6 m of a building.

Double wire meshes in the plane of the wall are used for shear reinforcement. The reinforcement ratio must not be less than 0.2%. The maximum bar spacing is 30 cm.

There are no limits on the amount of flexural reinforcement placed at the edge of walls, and there are no specifications for confinement of the boundary elements. A typical detail of the edge of a wall is shown in Fig. 4.2.

4.5 Anchorage Details and Concrete Cover

NCH 429 specifies bar hooks for anchorage. The hooks consist of a 180° bend with an inside diameter of 2.5 times the bar diameter, plus an extension of 4 times the bar diameter.

Welded splices, mechanical connectors, and lap splices are permitted. The lap splice length is computed on the basis of an allowable bond stress of 6 kg/cm^2 for class D concrete (1.6 $\sqrt{f'_c}$) and 8 kg/cm^2 for class E concrete (1.9 $\sqrt{f'_c}$) under static loading conditions. For seismic loads, the allowable bond stress is increased to 7 kg/cm^2 for class D (1.9 $\sqrt{f'_c}$) and 9 kg/cm^2 for class E (2.2 $\sqrt{f'_c}$).

Because the Chilean code does not specify different anchorage details for different situations, the main steel company in Chile, Compañía de Acero del Pacífico (CAP), has issued a manual that includes most cases [11]. The manual is also a catalog of CAP rebar products and specifications. Various tables in the manual give development lengths of deformed bars in tension and compression for flexural reinforcement, and splice lengths for the different bar diameters according to Chapter 12 of ACI [6]. It also gives the spacing limits for reinforcement according to Section 7.6 of ACI 318-83.

The CAP manual also summarizes the concrete cover requirements as defined by NCH 429. Concrete cover of 1.5 cm is specified for beams and columns not exposed to weather, and 1.0 cm for slabs. For concrete exposed to weather, the previous requirements increase to 2.5 and 2 cm, respectively. A minimum cover of 4 cm is specified for corrosive environments. The CAP manual also suggests a thicker concrete cover to improve fire protection of the steel.

CHAPTER 5

OBSERVED DAMAGE IN VIÑA DEL MAR

A number of surveys were conducted after the 1985 earthquake to assess the extent of damage in Viña del Mar. Initially, it was important to identify the severely damaged buildings, and to determine the number of destroyed houses and homeless people. The extent of damage in the moderate and lightly-damaged buildings and repair schemes were determined during later investigations. The engineering implications of the earthquake will continue to be a topic of research for many years following the earthquake.

The findings of the initial damage surveys for all buildings in Viña del Mar are summarized in Section 5.1. Observed damage in buildings with five or more stories is described in Section 5.2, and attempts to correlate the damage with structural characteristics are discussed in Sections 5.3, 5.4, and 5.5.

5.1 General Damage Survey

A complete survey of all dwellings was conducted as part of a microzonation study that was carried out by the Dirección de Planificación Urbana of the Municipality of Viña del Mar and the Universidad Técnica Santa Maria in Valparaíso [3]. The information summarized in this section is available at the Municipality.

The survey distinguished three levels of damage: minor, average, and major. A total of 2,130 houses and 36 apartment buildings were classified as having sustained major damage. Of the 36 apartment buildings that suffered major damage, 28 were located in the Canal Beagle housing complex (five-story buildings).

Shortly after the earthquake, the Municipality issued demolition decrees for 47 houses and one building (El Faro de Reñaca) that were considered

uninhabitable, irreparable, and hazardous to people or for neighboring properties.

The survey statistics indicated a total of 72,524 single dwellings in Viña del Mar at the time of the earthquake. No distinction was made between houses and apartments in buildings. Each individual apartment in a building was considered as one unit. Damage was observed in 15.4% of the total number of dwellings represented by the survey. This percentage may be separated with respect to the damage categories: 6.3% corresponds to minor damage, 5.3% to average damage, and 3.8% to major damage. The survey did not differentiate between structural and nonstructural damage.

The survey data were organized according to the neighborhoods or zones into which the Municipality divides the urban area (Fig. 5.1(a)). In particular, the percentage of damaged dwellings in each neighborhood was given. The map shown in Fig. 5.1(b) was produced from these data and provides a general picture of the spatial distribution of damage within the city. Each neighborhood was classified in one of six groups representing the percentage of damaged dwellings: 0-10%, 10-20%, 20-30%, 30-40%, 40-50%, and 50-60%.

The majority of the neighborhoods sustained less than 20% damage. Most of the zones with high levels of damage were located along the ridges that form the southeast boundary of the city. Neighborhoods of interest include Canal Beagle, number 76, and Reñaca, number 105. Eleven of the nineteen buildings having more than 14 stories are located in neighborhoods 55 and 56.

5.2 Damage to the Building Inventory

Independent of the general survey described in the previous section, information on damage to the building inventory was collected and checked as part of this project. These data came from two main sources: the observations of a few engineers and information on file at the Municipality.

The former were limited to a small number of important cases. The latter contained two types of damage reports: inspection reports written by engineers and architects who worked for the Municipality and reports presented to obtain work permits to repair the damage.

In most cases, the damage reports are not as complete as desired. The Municipality inspection was carried out with the main purpose of determining the most critical situations that required prompt action after the earthquake. Therefore, no attempt was made to document the damage in detail. The reports submitted for construction permits typically refer to the kind and quantity of the work to be done and to the corresponding budget.

On the basis of the available information, the level of damage in each building was classified in four categories: None, Light, Moderate, and Severe. These categories were applied to both structural and nonstructural damage. Buildings classified in the "None" category correspond to buildings for which there was no available information. It does not necessarily mean that there was positive evidence that these buildings were undamaged. It is unlikely, however, that any of these buildings could have suffered moderate or severe damage and remain unnoticed.

The damage classification for the 322 buildings described in Appendix A is given in Table 5.1. Also given is the cost of repair in thousands of Chilean pesos, as indicated in the repair permits or, in a few cases, as the total loss estimated by the writers. An exchange rate of about 200 Chilean pesos per U.S. dollar may be used to convert to 1987 dollars. It must be kept in mind, however, that the cost of construction in Chile is between one-quarter and one-half the cost of construction in the U.S.

5.3 Distribution of Damage with Respect to Year of Construction

It is of interest to determine if the distribution of damage in Viña del Mar may be interpreted with respect to the year of construction. The data in Table 5.1 for structural damage are organized by the number of buildings constructed per year in Fig. 5.2. The concentrations of damage in 1974 and 1977 correspond to the Canal Beagle complex, which is a special case. The remaining data do not provide any evidence of a relationship between the extent of damage in the building and the age of the building.

The influence of changes to the seismic code may also be investigated using Fig. 5.2. The current Chilean Code [7] was officially approved in 1972, but the same version was issued as a provisional code in 1966. It is believed that this code was used earlier, because the original proposal was made in 1962 [2]. Therefore, the majority of buildings in the inventory were designed with the same code. The observed damage did not indicate any relationship between the extent of damage and the building code used during design.

The buildings in Viña del Mar were subjected to relatively strong earthquakes in 1965 (M=7¾) and 1971 (M=7½). Approximately 40% of the buildings in Viña del Mar were constructed before 1971; however, the available data did not indicate a higher level of damage in these buildings due to cumulative effects.

No evidence is available to determine the influence of other trends in design, such as the use of computers for structural analysis, and slight changes in the quality of materials or structural configurations.

Figure 5.3 shows the level of nonstructural damage in the buildings with respect to the year of construction. As before, no specific trends are apparent.

5.4 Distribution of Damage with Respect to Height

The level of structural damage with respect to the number of stories is presented in Fig. 5.4, 5.5, and 5.6. It is apparent that the taller buildings (16 or more stories) sustained light or no damage.

Damage was observed in a large proportion of the buildings with 12 to 15 stories. Considering that the formula N/20, where N is the number of stories, gives a rough approximation of the fundamental period of vibration of a typical Chilean shear wall building, these buildings may be assumed to have an initial period between 0.6 and 0.7 seconds. The acceleration response spectra (Fig. 5.7) for the ground motion recorded in Viña del Mar indicate a high amplification factor in this range of natural periods. Therefore, the frequency content of the ground motion is one explanation for a slightly higher concentration of damage in buildings having 12 to 15 stories.

Aside from the concentration of damage in the 5-story buildings comprising the Canal Beagle complex (Fig. 5.6), the distribution of damage in low-rise buildings is uniform (Fig. 5.5).

The same observations are valid for nonstructural damage, as illustrated in Fig. 5.5 and 5.6.

5.5 Structural Indices

Various structural indices have been proposed for the evaluation of the seismic safety of existing buildings and have also been related to observed earthquake damage [18]. The most useful indices provide a reference of the characteristics of a building and require no more effort than a simple calculation.

Two such indices were developed in Japan to determine the likelihood of damage in low-rise school buildings [18,1]. Although the indices were not developed for moderate-rise structures, they were used to interpret the

observed damage in Viña del Mar. Index I_1 is the ratio of the cross-sectional area of walls in one direction at one level of the building to the total floor area above that level*. The critical level for index I_1 corresponds to the direction and level in the building for which I_1 is a minimum. This index represents the amount of wall area available for lateral resistance per unit area of construction.

Index I_2, which was discussed in Section 3.4, is defined as the ratio of the total weight of the building above one level to the total cross-sectional area of walls and columns in one direction at that level. I_2 may be considered to represent an average shear stress in the level; therefore, the critical level and direction correspond to those giving the maximum value of I_2.

Indices I_1 and I_2 were computed for all the Viña del Mar buildings for which drawings were available. These data are presented in Table 5.2. The total weight above the critical level was computed using an estimated average unit weight of 1000 kg/m^2 which is a reasonable value for Chilean buildings.

The data in Table 5.2 indicate that I_1 is between 15 and 50 cm^2/m^2 (or 0.15 to 0.5%) for most buildings in Viña del Mar. Similarly, I_2 is in the range between 10 and 80 kg/cm^2 (Fig. 3.11 and Table 5.2). Assuming a design base shear of 0.1W in which W is the total weight of the building, the range of I_2 indicates that the Chilean buildings are typically designed for average shear stresses between 1 and 8 kg/cm^2 (14 to 110 psi). The satisfactory behavior of the buildings in Viña del Mar may indicate that designing buildings for a low average shear stress is a reasonable design criterion.

Studies of damage in low-rise buildings during earthquakes in Japan indicated that damage consistently occurred when the values of I_1 were less

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* It was elected to distinguish between walls and columns on the basis of the shape of the cross section. Vertical elements with an aspect ratio greater than 3 were considered to be walls.

than 30 cm^2/m^2 and values of I_2 were greater than 12 kg/cm^2 [1]. Data from the Viña del Mar inventory were plotted in Fig. 5.8 to determine if similar trends existed. The horizontal axis in these plots is the index I_1 and the vertical axis is the index I_2. Each data point represents one building configuration. The four plots correspond to the cases of no, light, moderate, and severe structural damage.

The data presented in Fig. 5.8 indicate that the damage in Viña del Mar was not well correlated with the indices I_1 and I_2. Unlike the low-rise buildings in Japan [1,18], damage was not concentrated in buildings with high ratios of weight to wall area and small ratios of wall area to plan area.

Two factors may account for the discrepancy between generalizations of damage to Chilean and Japanese buildings. The indices do not identify buildings that are susceptible to flexural problems. For example, El Faro de Reñaca had a relatively large ratio of wall area to plan area and low ratio of weight to wall area, yet suffered serious damage. However, the structural walls were very lightly reinforced (longitudinal reinforcement ratios in the main walls were on the order of 0.2%), and the failure was possibly exacerbated by torsional response.

The second factor relates to the response spectrum for the ground motion. Low-rise buildings have short periods, and for most ground motions lie within the constant acceleration region and the base shear developed during the earthquake increases with the number of stories. The medium-rise buildings, on the other hand, are likely to be in the constant velocity region. The response acceleration decreases in this region, and the base shear is no longer proportional to the number of stories. Therefore, a high value for the ratio of weight to wall area in a 20-story building may not be interpreted in the same manner as a high ratio in a 2-story building.

Figure 5.9 shows similar plots for the nonstructural damage observed in the building inventory. It is also apparent from these data that no set of

buildings may be identified as being more susceptible to damage on the basis of these parameters.

5.6 Concluding Remarks

The relationships between the easily identifiable building characteristics and observed damage described in the preceding sections did not produce a basis for identifying buildings that were damaged during the 1985 earthquake. Unlike the low-rise school buildings in Japan, the data collected from the building inventory in Viña del Mar indicate that more detailed analyses are required to evaluate the susceptibility of a building to damage.

CHAPTER 6

SUMMARY

The damage caused by the 1985 earthquake in central Chile was significant. Official estimates of the loss are equal to 10% of the annual Gross Domestic Product of Chile. However, damage in the coastal city of Viña del Mar, where strong ground motion was recorded [16], was light. Less than 4% of the residences in the city suffered major damage and there were no deaths caused by the collapse of buildings.

The structural characteristics of the buildings in Viña del Mar are quite different from buildings located in seismic regions of the U.S. All buildings having five or more stories in Viña del Mar were constructed from reinforced concrete and structural walls were used in more than 95% of the buildings to resist lateral loads. The structural walls occupy a large portion of the floor area, typically 6%, and are very lightly reinforced. No special details for ductility are required by the governing building code.

The performance of the building inventory in Viña del Mar during the earthquake was very good, with the exception of the Canal Beagle housing complex (Fig. 5.1) where nearly all the buildings were severely damaged.

TABLES

Table 2.1 Summary of Selected Chilean Economic Variables and Construction Statistics for the Period 1940-1985

Line	Economic Variables	1940	1941	1942	1943	1944	1945	1946	1947	1948
1	Annual Rate of Growth of the GDP (%)		0.2	3.3	2.9	1.9	8.6	8.6	-10.8	16.6
2	Construction GDP (thousand 1965 Chilean $)	312	374	327	337	406	437	562	538	448
3	Rate of Growth of Construction GDP (%)		19.9	-12.6	3.1	20.5	7.6	28.6	-4.3	-16.7
4	Share of Construction Sector in GDP (%)	4.5	5.4	4.5	4.5	5.4	5.3	6.3	6.8	4.8
5	Total Constructed Area (thousand m^2)	709	727	563	651	760	763	1119	917	799
6	Public Sector Construction (thousand m^2)									
7	Private Sector Construction (thousand m^2)									
8	Steel Production (thousand metric tons)	10	9	8	7	10	14	21	31	30
9	Cement Production (thousand metric tons)	385	360	365	375	363	411	580	602	540
10	Construction in Vina del Mar* (thousand m^2)									

Line	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962
1	-2.2	4.9	4.4	6.4	7.5	-3.2	3.8	1.7	10.3	5.5	-5.7	8.3	6.0	5.3
2	449	495	473	476	615	596	697	733	771	754	647	711	826	951
3	0.2	10.2	-4.4	0.6	29.2	-3.1	16.9	5.2	5.2	-2.2	-14.2	9.9	16.2	15.1
4	5.0	5.2	4.8	4.5	5.4	5.4	6.1	6.3	6.0	5.6	5.1	4.9	5.4	5.9
5	807	787	739	751	984	991	1141	1100	823	856	2341	2115	2716	3136
6		20	26	0	30	9	54	395	322	0	1243	1232	1563	1139
7		767	713	751	954	982	1087	705	501	856	1098	883	1153	1997
8	32	56	178	243	313	321	290	381	339	348	415	422	363	495
9	495	513	698	818	762	775	804	771	727	719	833	835	905	1147
10	11.9	1.9	0.0	6.5	0.0	3.6	0.0	7.1	25.4	0.0	23.9	27.3	0.0	20.5

* Reinforced concrete buildings having five or more stories.

Table 2.1 (cont.) Summary of Selected Chilean Economic Variables and Construction Statistics for the Period 1940-1985

Line	Economic Variable	1963	1964	1965	1966	1967	1968	1969	1970	1971
1	Annual Rate of Growth of the GDP (%)	4.4	4.9	6.5	9.9	1.3	3.5	5.5	3.5	5.2
2	Construction GDP (thousand 1965 Chilean $)	1006	986	1001	961	924	929	1010	1037	1155
3	Rate of Growth of Construction GDP (%)	5.8	-2.0	1.5	-4.0	-3.9	0.5	8.7	2.7	11.3
4	Share of Construction Sector in GDP (%)	6.0	5.6	5.3	4.7	4.4	4.3	4.4	4.4	4.6
5	Total Constructed Area (thousand m2)	2550	2110	3657	2257	3176	3485	2915	2436	4982
6	Public Sector Construction (thousand m^2)	882	590	2155	960	1670	1851	1097	662	3907
7	Private Sector Construction (thousand m^2)	1668	1520	1502	1297	1506	1634	1818	1774	1075
8	Steel Production (thousand metric tons)	498	544	477	540	596	526	601	547	607
9	Cement Production (thousand metric tons)	1169	1267	1188	1364	1234	1251	1436	1349	1370
10	Construction in Vina del Mar* (thousand m^2)	35.7	71.0	34.9	12.7	3.3	44.4	8.3	29.9	6.7

Line	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
1	-0.6	-1.1	4.2	-14.3	3.8	9.7	8.3	8.2	6.5					
2	1048	924	1107	765	621	643								
3	-9.3	-11.8	19.8	-30.9	-18.8	3.5								
4	4.2	3.7	4.4	3.6	4.5	4.1	4.1	4.6	5.1					
5	2539	2599	1904	1717	2598	2358	2567	3591	4743	5638	2128	2448	2793	3298
6	1214	1248	285	363	1355	953	486	199	312	279	187	155	136	123
7	1325	1351	1619	1354	1243	1405	2081	3392	4331	5359	1941	2293	2657	3175
8	581	508	596	458	448	509	597	657	704	644	492	611	692	
9	1408	1372	1423	1206	968	1140	1203	1357	1583	1863	1132	1255	1390	
10	3.3	0.0	13.2	37.5	3.5	34.2	60.7	30.9	88.8	91.7	64.0	1.9	3.5	

* Reinforced concrete buildings having five or more stories.

TABLE 3.1 BUILDING INVENTORY OF VIÑA DEL MAR

DATA SHEET	BUILDING	NUMBER OF BUILDINGS	ADDRESS	NUMBER OF STORIES	HEIGHT (m^2)	DRAWING AVAILABLE	DATE OF CONSTR.	CONSTRUCTED AREA (m^2)
1	PLAZA DEL MAR	1	SAN MARTIN 787	23	68.4	Yes	1982	22876
2	QUINTA CLAUDE	4	ALVAREZ 1926-2052	23	63.0	Yes	1978	12126
3	TORRES DEL SOL	1	8 NORTE 310 - 330	22	65.7	Yes	1981	11946
	PLAYA REÑACA	1	BORGOÑO 15638	22				
4	PORTAL ALAMO	1	VALPARAISO 507	21	63.0		1975	10864
5	TORRES DE MIRAMAR	2	SAN MARTIN 1020 Y 1080	21	56.7	Yes	1975	11745
6	MARINA REAL	1	SAN MARTIN 880	20	63.4	Yes	1981	9653
	ATALAYA DEL PACIFICO	1	BORGOÑO 15466	18				
7	TORRES DEL PACIFICO	3	SAN MARTIN 1130-1206-S/N	17	45.0	Yes	1980	9449
8	MAR DEL SUR	1	ALVAREZ 58	16	42.7	Yes	1980	8011
9	ACAPULCO	1	SAN MARTIN 821	15	41.3	Yes	1965	9789
10	TAHITI	1	SAN MARTIN 972	15	41.3	Yes	1971	6695
11	HANGA ROA	1	SAN MARTIN 925	15	41.3	Yes	1970	16550
12	DON JOSE	1	2 NORTE - LIBERTAD	14	40.0	Yes	1981	5972
13	FESTIVAL	1	9 NORTE 450	14	38.2	Yes	1979	14697
14	PUESTA DE SOL	1	ECUADOR 23	14	37.5	Yes	1980	4402
15	O'HIGGINS	1	ARLEGUI 734	14	37.0		1962	5274
	SIETE HERMANAS	1	SIETE HERMANAS	14				
16	GAL. LIBERTAD CENTRO	1	LIBERTAD 466/ 6 NORTE	13	38.0	Yes	1980	7589
17	VICUÑA MACKENNA	1	PLAZA VERGARA 142	13	35.0		1965	3879
18	JOSE FCO. VERGARA	1	PLAZA PARROQUIA 325	12	37.8	Yes	1958	7289
19	ATALAYA	1	AV. PERU 590	12	34.4	Yes	1968	4992
20	CORAL	1	SAN MARTIN 928	12	33.7	Yes	1969	8318
21	MEDITERRANEO	1	4 NORTE - 1 ORIENTE	12	32.8	Yes	1981	5081
	SIETE HERMANAS	1	SIETE HERMANAS	12				
	SIETE HERMANAS	4	SIETE HERMANAS	12				
	SIETE HERMANAS	1	SIETE HERMANAS	12				
22	PLAZA	1	PLAZA VERGARA 60	11	34.2	Yes	1962	5725
23	PONTECASINO	1	MARINA 110	11	32.0			
24	SOLIMAR	1	SAN MARTIN 120	11	32.0		1978	3372
25	NUEVO CENTRO 1	1	LIBERTAD 13-17	11	31.5	Yes	1977	3456
26	MAYA	1	SAN MARTIN 458	11	30.8	Yes	1980	3527
27	TOSSA DEL MAR	1	AV. PERU 444	11	30.0	Yes	1974	1872
28	CENTRO MAR	1	SAN MARTIN 605	11	30.0		1980	3400
29	MIRADOR	1	MARINA 72	11	29.0		1979	9103
30	VILLA SOFIA	1	SAN JOSE ORIENTE 277	11	28.4	Yes	1982	7710
31	MILLALEBU	1	MARINA 156	11	27.8	Yes	1962	2026
	LIBERTAD	3	LIBERTAD 22-50-80	11				
32	ANGELMO	1	7 NORTE 476	10	36.3	Yes	1980	2483
33	ECUAMAR	1	ECUADOR 130	10	34.9	Yes	1981	4573
34	EL ESCORIAL	1	PLAZA VERGARA 177	10	32.5	Yes	1963	6952
35	DANUBIO	1	2 ORIENTE 281	10	30.2	Yes	1977	4003
36	FLAMINGO	1	VALPARAISO 169-175	10	29.8	Yes	1964	3988
37	MIAMI	1	MARINA 154	10	29.4		1964	2539
38	ISAMAR	1	SAN MARTIN 236	10	29.0	Yes	1970	6923
39	ARLEGUI	1	ARLEGUI 645	10	29.0	Yes	1958	6340
40	ANTUMALAL	1	AV. PERU 680	10	29.0	Yes	1966	4861
41	ULTRAMAR	1	8 NORTE 250	10	29.0		1964	3529
42	VILLA REAL	1	4 PONIENTE 390	10	29.0	Yes	1982	2763
43	RAPA NUI	1	MARINA 198	10	29.0	Yes	1970	2655
44	ITALIA	1	VALPARAISO 230	10	28.0	Yes	1960	6600
45	ITALIA	1	VALPARAISO 230	10	28.0	Yes	1960	6600
46	LIMARI	1	ETCHEVERS 49	10	27.4	Yes	1965	2144
47	DON BENJAMIN - ROSA	2	2 ORIENTE 610-628	10	27.2	Yes	1980	4250
48	LAS PALMAS	1	MARINA 80	10	27.1	Yes	1957	5650
49	COPACABANA	1	MARINA 84	10	27.0	Yes	1965	8486
50	MONTE CARMELO	1	4 NORTE 675	10	26.8	Yes	1981	4249
51	MILLAHUE	1	2 NORTE 41	10	26.6	Yes	1967	1326
52	ALIAMAPU	1	ARLEGUI 547	10	26.0		1972	3267
	SIN NOMBRE	1	BORGOÑO 21600	10				
	COMUNIDAD ARLEGUI	1	ARLEGUI 1645	10				
	BAHIA	1	AV. PERU 530	10				
	KUSANOVIC	1	MARINA 138	10				

TABLE 3.1 (cont.) BUILDING INVENTORY OF VIÑA DEL MAR

DATA SHEET	BUILDING	NUMBER OF BUILDINGS	ADDRESS	NUMBER OF STORIES	HEIGHT (m^2)	DRAWING AVAILABLE	DATE OF CONSTR.	CONSTRUCTED AREA (m^2)
53	ARCADIA	1	ARLEGUI 440	9	31.5	Yes	1981	10958
54	RAPALLO	1	TCHEVERS 229	9	28.5	Yes	1964	5281
55	BCO. ESPAÑOL CHILE	1	ARLEGUI 682	9	27.8	Yes	1962	2973
56	SAN ANTONIO CENTRO	1	11 NORTE - SAN ANTONIO	9	27.5	Yes	1982	11298
57	ALTAMAR	1	SAN MARTIN 575	9	26.6	Yes	1980	2711
58	LOS ALAMOS	1	3 NORTE 207	9	26.0	Yes	1965	2544
59	LAS TERRAZAS	1	5 PONIENTE 336	9	26.0	Yes	1981	2554
60	EL MAR	1	VICUÑA MACKENNA S/N	9	25.6	Yes	1981	4401
61	ANCONA	1	7 NORTE 65	9	25.6	Yes	1978	1497
62	MARINA	1	MARINA 94	9	25.5	Yes	1958	8149
63	SAUSALITO	1	7 NORTE 52	9	25.2	Yes	1963	2639
64	FONTANA	1	2 NORTE 17	9	25.0	Yes	1963	1747
65	ANTILCO	1	5 NORTE 161 - 169	9	25.0	Yes	1964	2241
66	EL FARO (REÑACA)	1	LA JOYA 109	9	24.9	Yes	1981	1250
67	EL RECREO	1	SUB. CONDELL 38	9	24.7		1970	1261
68	LAS ACHIRAS	1	3 NORTE 444	9	24.7	Yes	1965	2464
69	MALLORCA	1	2 NORTE 660-680	9	24.6	Yes	1975	3181
70	CASTILLA	1	VALPARAISO 426	9	24.5	Yes	1965	2221
71	RIVIERA	1	3 NORTE 60	9	24.4	Yes	1963	2314
72	LAUTARO I	1	ARLEGUI 160	9	24.2	Yes	1982	9263
73	AMERICA	1	ARLEGUI 580	9	24.0		1970	2464
74	VIANA	1	VIANA 345	9	24.0			
75	BRASILIA	1	ETCHEVERS 268	9	23.9		1978	2073
76	EL FARO (VIÑA)	1	MARINA 70	9	23.9	Yes	1980	666
77	ARMINSA	1	LIBERTAD 529	9	23.7	Yes	1976	1446
78	PLENO MAR	1	SUB. CONDELL 62	9	23.5	Yes	1981	1691
79	DALCAHUE	1	8 1/2 NORTE S/N	9	23.5		1983	1851
80	GRAN PRIX	1	3 NORTE 936	9	23.1	Yes	1967	1931
	PORTALES HUALAÑE	1	LIBERTAD 448	9				
	LOS TRIPULANTES	1	BORGOÑO 15300	9				
	SIETE HERMANAS	11	SIETE HERMANAS	9				
	LORENA	1	AV. PERU 576	9				
	LOS NAVEGANTES	1	BORGOÑO 15880	9				
	LOS ARCOS	1	BORGOÑO 15640	9				
	LAS ARENAS	1	BORGOÑO 23160	9				
	TORRE MOLINOS	1	BORGOÑO 15140	9				
	LOS PAJAROS	1	BORGOÑO 15100	9				
	ROCAMAR	1	AV. PERU S/N	9				
	MARAL	1	6 NORTE 25	9				
	LOS OLIVOS	1	2 PONIENTE 520	8				
	SIN NOMBRE	1	ARLEGUI 682	8				
81	BCO. CRED. E INVER.	1	ECUADOR 182	8	27.0	Yes	1964	2278
82	DINAMARCA	1	VALPARAISO 483	8	24.1	Yes	1968	1948
83	CRISOL	1	3 PONIENTE 654	8	24.0		1981	3150
84	MONTECARLO	2	6 NORTE 241-289	8	23.7	Yes	1963	5120
85	VON SCHROEDERS	1	ALVAREZ - VON SCHROEDERS	8	23.4	Yes	1981	2997
86	ROTONDA	2	SAN MARTIN 160-172	8	22.5	Yes	1964	4142
87	COSTA AZUL	1	MURPHY 321	8	22.4	Yes	1961	11634
88	ACHAO	1	8 NORTE S/N	8	22.0	Yes	1982	1752
89	CORI	1	DIEGO PORTALES 916	8	21.7		1966	1533
90	EL MARQUES	1	8 NORTE 779	8	21.6	Yes	1980	2037
91	CAPRI	1	SAN MARTIN 563	8	21.5	Yes	1962	1227
92	POB. LORD COCHRANE	1	CALLE SIN SALIDA 1450	8	20.8	Yes	1964	2920
93	POB. LORD COCHRANE	2	CALLE SIN SALIDA 1450	8	20.8	Yes	1964	3040
94	POB. LORD COCHRANE	4	BARROS ARANA 715..795	8	20.8		1964	
95	POB. LORD COCHRANE	1	CALLE SIN SALIDA 1450	8	20.8	Yes	1964	2948
	SIN NOMBRE	1	BORGOÑO 15400	8				
	MONTE CARLO	1	SAN MARTIN 540	8				
	REY SOL V	1	MIRAMAR 69	8				
	GLORIA	1	BORGOÑO - EL ENCANTO	8				
	SIN NOMBRE	1	LA BARCA 198	8				
	PLAYA NEGRA	1	BORGOÑO 22500	8				

TABLE 3.1 (cont.) BUILDING INVENTORY OF VIÑA DEL MAR

DATA SHEET	BUILDING	NUMBER OF BUILDINGS	ADDRESS	NUMBER OF STORIES	HEIGHT (m^2)	DRAWING AVAILABLE	DATE OF CONSTR.	CONSTRUCTED AREA (m^2)
96	HOTEL SAN MARTIN	1	SAN MARTIN 667	7	25.0			
97	MARRACHINI	1	6 PONIENTE 372	7	23.5	Yes	1960	1432
98	ALVAREZ	1	ALVAREZ 660	7	22.5		1951	1847
99	EL CIPRES	1	5 NORTE 560	7	22.4	Yes	1981	1256
100	COUVE	1	PLAZA SUCRE 220	7	21.1	Yes	1950	11866
101	VIÑA RIO	1	3 NORTE 834	7	21.1		1981	1455
102	VERONA	1	SAN MARTIN 734	7	20.2		1968	
103	SOTAVENTO	1	AMUNATEGUI 1585	7	20.0	Yes	1982	1489
104	LAS BRISAS	1	6 NORTE 24	7	20.0	Yes	1953	6495
105	LAS TORCAZAS	1	ALVAREZ 1214	7	20.0		1982	2221
106	NIZA	1	6 PONIENTE 220	7	19.7	Yes	1961	1059
107	FLORIDA	1	8 NORTE 250	7	19.5		1964	1776
108	CONJ. HAB. LIMACHE	2	LIMACHE 1967	7	19.5	Yes	1981	1903
109	BONANZA	1	3 NORTE 580	7	19.4	Yes	1980	2807
110	ANDES	1	VALPARAISO 122	7	19.4	Yes	1960	1474
111	ARRECIFES	1	2 PONIENTE 510	7	19.1			937
112	ISCAVAS	1	VILLANELO 183	7	18.9	Yes	1977	2760
113	GELLONA	1	MARINA 66	7	18.9		1965	2010
114	FENIX	1	LIBERTAD 733	7	18.9	Yes	1982	888
115	AV. PERU	1	AV. PERU 548	7	18.4	Yes	1958	1592
116	BABURIZZA	1	ARRIETA 698	7	18.2			
117	VIÑA OESTE	1	2 PONIENTE 471	7	16.5		1982	1836
	LITORAL	1	EL ENCANTO S/N	7				
	LOS LIGUSTROS	1	LOS LIGUSTROS 184	7				
	TERRAZAS DE CONCON	1	BORGOÑO 23140	7				
	CASTELLON	1	2 PONIENTE 670	7				
	LAS ROCAS	1	BORGOÑO 15886	7				
	MALIBU	1	BORGOÑO 10066	7				
	MONTEMAR	1	BORGOÑO 15700	7				
	SIN NOMBRE	1	8 NORTE 333	7				
	LOS ACACIOS	1	3 NORTE - 4 PONIENTE	7				
	HERNANDEZ	1	ARLEGUI 270	7				
	LAS ENCINAS	1	3 NORTE 486	6				
118	EUROSOL	2	BORGOÑO 15645	6	20.3	Yes	U.C.	3014
119	BCO. DEL TRABAJO	1	ARLEGUI 211	6	19.8	Yes		7188
120	BCO. DEL ESTADO	1	VILLANELO 24	6	19.0	Yes	1951	
121	BCO. CONCEPCION	1	ECUADOR 112	6	17.9	Yes	1960	1966
122	COUSIÑO	1	ALVAREZ 186	6	17.5		1963	1650
123	ARUBA	1	2 PONIENTE 659	6	16.9		1979	1102
124	HONOLULU	1	2 NORTE 360	6	16.8	Yes	1976	2048
125	CALETA ABARCA	1	TORO HERRERA 307	6	16.6	Yes	1984	3477
126	MALAU TARU	1	ECUADOR 116	6	16.5	Yes	1965	1375
127	REÑACA PLAYA CLUB	1	BORGOÑO - ANGAMOS	6	16.5	Yes	1980	4814
128	NUEVO CENTRO 2	1	LIBERTAD 39-67	6	16.0	Yes	1978	5251
129	POB. LORD COCHRANE	3	CALLE SIN SALIDA S/N	6	16.0	Yes	1964	1969
130	POB. LORD COCHRANE	1	CAMINO REAL	6	16.0	Yes	1964	2234
131	POB. LORD COCHRANE	1	CAMINO REAL	6	16.0	Yes	1964	2078
132	POB. LORD COCHRANE	1	CAMINO REAL	6	16.0	Yes	1964	2119
133	MAR DE CHILE	3	CALLE 1-2411 Sta. Ines	6	16.0		1980	1527
134	COOP. BENIDORM	6	COOP. BENIDORM	6	16.0		1980	
135	MERANO	1	8 NORTE 846	6	15.7		1979	1500
136	ESMERALDA	1	ARLEGUI 473	6	15.6	Yes	1962	1774
137	MONACO	1	4 NORTE 612	6	15.0	Yes	1964	2165
138	PALERMO	1	4 PONIENTE 345	6	15.0	Yes	1982	1902
	BLOCK 2-C	1	AV. VIÑA DEL MAR S/N	6				
	BLOCK 1-C	1	CALLE DEL AGUA	6				
	IPANEMA	1	LAS PERLAS S/N	6				
	BLOCK 1-B	1	AV. VIÑA DEL MAR 2248	6				
	BLOCK 1-A	1	AV. VIÑA DEL MAR 2204	6				
	MIRAMAR	1	MARINA 64	6				
	BLOCK 2-A	1	AV. VIÑA DEL MAR S/N	6				
	NAUTICO PAGUAL	1	BORGOÑO 21200	6				
	TRAMONTO	1	CAMINO DEL ALTO 1300	6				
	ALIANZA BLOCK B	1	ECUADOR 350	6				

TABLE 3.1 (cont.) BUILDING INVENTORY OF VIÑA DEL MAR

DATA SHEET	BUILDING	NUMBER OF BUILDINGS	ADDRESS	NUMBER OF STORIES	HEIGHT (m^2)	DRAWING AVAILABLE	DATE OF CONSTR.	CONSTRUCTED AREA (m^2)
	SIETE HERMANAS	1	SIETE HERMANAS	6				
	BLOCK 2-B	1	AV. VIÑA DEL MAR S/N	6				
	BLOCK 3-C	1	AV. VIÑA DEL MAR S/N	6				
139	VILLA ANAKENA	6	23 NORTE 950..1050	5	15.9		1981	1367
140	HOTEL O'HIGGINS	1	PLAZA VERGARA S/N	5	15.5			
141	COVADONGA	1	VILLANELO 158	5	15.2	Yes	1957	1429
142	1 ORIENTE 87	1	1 ORIENTE 87	5	15.0	Yes	1964	968
143	VERDE MAR	1	3 NORTE - 4 PONIENTE	5	15.0	Yes	1960	5787
144	ANGAMOS	1	ANGAMOS 460-480	5	15.0		1980	1785
145	NAUTICO	1	AV. BORGOÑO 21659	5	14.6	Yes	1963	2043
146	PLEAMAR	1	IGNACIO CARRERA PINTO 150	5	14.5	Yes	1980	3161
147	LIGURIA	1	2 NORTE 279	5	14.3	Yes	1961	1704
148	BAGNARA	1	VILLANELO 56	5	14.2	Yes	1955	3570
149	FAURA	1	3 NORTE 131	5	14.2		1958	1163
150	POB. LORD COCHRANE	3	CALLE SIN SALIDA S/N	5	14.0	Yes	1964	1641
151	POB. LORD COCHRANE	1	CAMINO REAL	5	14.0	Yes	1964	1766
152	POB. LORD COCHRANE	1	CAMINO REAL	5	14.0	Yes	1964	1862
153	POB. LORD COCHRANE	5	M. RODRIGUEZ 1423-1563	5	14.0	Yes	1964	770
154	POB. EMPART	4	15 NORTE 1027	5	14.0		1968	3388
155	POB. EMPART	1	15 NORTE 1003	5	14.0		1968	3412
156	POB. EMPART	6	15 NORTE 1045-1067-1093	5	14.0		1968	3416
157	POB. EMPART	1	15 NORTE 1027	5	14.0		1968	
158	LOS OLMOS	1	LOS OLMOS 11-33	5	13.8		1963	5597
159	PRUNOTTO	2	VALPARAISO 279	5	13.7	Yes	1958	903
160	SAN JOSE	1	ALVAREZ 247	5	13.5		1966	735
161	POB. LOS LIMONALES	3	LOS LIMONALES	5	13.5		1961	1551
162	POB. LOS LIMONALES	4	LOS LIMONALES	5	13.5		1961	1290
163	BARRIOS	1	2 NORTE 1134	5	13.5		1964	1212
164	BONANZA	1	AV. BORGOÑO 21711	5	13.5	Yes	1974	1513
165	VIÑA SOL	1	5 NORTE 531	5	13.5	Yes	1979	883
166	EIMAR	1	2 PONIENTE 545	5	13.1	Yes	1979	1088
167	CANAL BEAGLE K5	8	POB. CANAL BEAGLE	5	13.0	Yes	1974	750
168	CANAL BEAGLE H.A.	34	POB. CANAL BEAGLE	5	13.0	Yes	1977	705
169	CANAL BEAGLE J5	42	POB. CANAL BEAGLE	5	13.0	Yes	1974	730
170	NIETO	1	PSJE. NIETO 89	5	13.0		1963	425
171	COVADONGA	5	1 PONIENTE 1255	5	13.0		1974	1213
172	COOP. BENIDORM	6	COOP. BENIDORM	5	13.0		1980	
173	PAGODA	1	LIBERTAD 412	5	13.0		1962	1499
174	MONTEGRANDE	1	TRASLAVIÑA 278	5	13.0		1966	3303
175	CONJ. HAB. LIMACHE	6	LIMACHE 1558 - 1514	5	13.0		1981	1103
	PLAYA NEGRA 2	1	AV. VERGARA 95	5				
	FABIOLA	3	SUB. ALESSANDRI 2075-2171	5				
	PROVENZAL	1	PJE. LAS VIOLETAS 190	5				
	LAS PALMAS	1	ECUADOR 285	5				
	LAS GAVIOTAS	1	LAS GAVIOTAS 90	5				
	SIN NOMBRE	1	ARLEGUI 969	5				
	QUINTA VERGARA	1	ERRAZURIZ 560	5				
	PACIFICO	1	VIANA 423	5				
	CIMERA	1	PASAJE MARDONES S/N	5				
	PLAZA MIRAFLORES	1	LOS OLMOS 11-33	5				
	SIN NOMBRE	1	CALLE 1 S/N	5				
	SIN NOMBRE	1	ALVAREZ 530	5				
	CALEUCHE II	1	EL ENCANTO 821	5				
	SIN NOMBRE	1	2 NORTE - 1 ORIENTE	5				
	LA ISLA	1	CENTRAL 190	5				
	HIGUERILLAS	1	AV. BORGOÑO 21607	5				
	CALEUCHE	1	BORGOÑO 16160	5				
	CONJ. HABITACIONAL	3	LIMACHE	5				
	PICASSO	1	4 PONIENTE 440	5				
	ARANJUEZ	1	1 ORIENTE 777	5				
176	AGUA SANTA	1	ALVAREZ 32	14	38.9		1979	5570
177	SANTILLANA DEL MAR	1	AV. PERU 464	10	29.0		1963	2040
178	TIVOLI	1	MARINA 154	9	24.0		1966	2278

TABLE 5.1 OBSERVED DAMAGE IN VIÑA DEL MAR

DATA SHEET	BUILDING	STRUCTURAL DAMAGE				NONSTRUCTURAL DAMAGE				COST OF REPAIR 10^3 pesos
		NONE*	LIGHT	MODERATE	SEVERE	NONE*	LIGHT	MODERATE	SEVERE	
1	PLAZA DEL MAR		X				X			
2	QUINTA CLAUDE	X				X				
3	TORRES DEL SOL		X				X			
4	PORTAL ALAMO	X				X				
5	TORRES DE MIRAMAR	X				X				
6	MARINA REAL		X				X			5,000
7	TORRES DEL PACIFICO	X						X		1,000
8	MAR DEL SUR	X				X				
9	ACAPULCO				X				X	180,000
10	TAHITI			X	X			X	X	2,825
11	HANGA ROA				X				X	225,000
12	DON JOSE		X	X					X	10,000
13	FESTIVAL			X				X		41,390
14	PUESTA DE SOL	X				X				
15	O'HIGGINS	X					X			58
16	GAL. LIBERTAD CENTRO		X	X				X		5,000
17	VICUÑA MACKENNA		X	X				X		300
18	JOSE FCO. VERGARA	X					X			470
19	ATALAYA	X				X				
20	CORAL			X	X				X	15,659
21	MEDITERRANEO	X				X				
22	PLAZA		X				X	X		3,235
23	PONTECASINO	X				X				
24	SOLIMAR	X				X				
25	NUEVO CENTRO 1	X				X				
26	MAYA	X				X				
27	TOSSA DEL MAR	X				X				
28	CENTRO MAR	X					X			75
29	MIRADOR	X				X				
30	VILLA SOFIA	X				X				
31	MILLALEBU	X				X				
32	ANGELMO	X				X				
33	ECUAMAR	X				X				
34	EL ESCORIAL		X					X		2,028
35	DANUBIO	X				X				
36	FLAMINGO	X				X				
37	MIAMI	X				X				
38	ISAMAR		X					X	X	6,100
39	ARLEGUI			X				X		1,750
40	ANTUMALAL	X				X				
41	ULTRAMAR		X				X	X		
42	VILLA REAL		X				X			
43	RAPA NUI	X				X				
44	ITALIA	X				X				
45	ITALIA	X				X				
46	LIMARI	X				X				
47	DON BENJAMIN - ROSA	X				X				
48	LAS PALMAS	X				X				
49	COPACABANA	X				X				
50	MONTE CARMELO	X				X				
51	MILLAHUE	X				X				
52	ALIAMAPU	X					X			3,255
53	ARCADIA		X				X			450
54	RAPALLO	X				X				
55	BCO. ESPAÑOL CHILE		X					X		480

* No damage or no information about damage.

TABLE 5.1 (cont.) OBSERVED DAMAGE IN VIÑA DEL MAR

DATA SHEET	BUILDING	STRUCTURAL DAMAGE				NONSTRUCTURAL DAMAGE				COST OF REPAIR 10^3 pesos
		NONE*	LIGHT	MODERATE	SEVERE	NONE*	LIGHT	MODERATE	SEVERE	
56	SAN ANTONIO CENTRO		X				X			1,792
57	ALTAMAR	X				X				
58	LOS ALAMOS		X					X		380
59	LAS TERRAZAS	X				X				
60	EL MAR	X				X				
61	ANCONA	X				X				
62	MARINA	X					X			100
63	SAUSALITO	X				X				
64	FONTANA	X				X				
65	ANTILCO	X					X			105
66	EL FARO (REÑACA)				X				X	62,500
67	EL RECREO	X				X				
68	LAS ACHIRAS		X					X		441
69	MALLORCA	X				X				
70	CASTILLA	X				X				
71	RIVIERA	X					X			135
72	LAUTARO I	X				X				
73	AMERICA	X				X				
74	VIANA		X					X		416
75	BRASILIA	X				X				
76	EL FARO (VIÑA)	X				X				
77	ARMINSA	X				X				
78	PLENO MAR	X				X				
79	DALCAHUE		X				X			95
80	GRAN PRIX	X				X				
81	BCO. CRED. E INVER.	X				X				
82	DINAMARCA		X				X			150
83	CRISOL	X				X				
84	MONTECARLO			X				X		5,837
85	VON SCHROEDERS	X				X				
86	ROTONDA	X					X			55
87	COSTA AZUL	X				X				
88	ACHAO	X				X				
89	CORI	X				X				
90	EL MARQUES		X					X		2,719
91	CAPRI	X				X				
92	POB. LORD COCHRANE	X				X				
93	POB. LORD COCHRANE	X				X				
94	POB. LORD COCHRANE	X				X				
95	POB. LORD COCHRANE	X				X				
96	HOTEL SAN MARTIN	X				X				
97	MARRACHINI	X				X				
98	ALVAREZ		X					X		
99	EL CIPRES	X				X				
100	COUVE	X				X				
101	VIÑA RIO	X					X			
102	VERONA			X				X		1,144
103	SOTAVENTO	X				X				
104	LAS BRISAS	X				X				
105	LAS TORCAZAS	X				X				
106	NIZA	X				X				
107	FLORIDA		X				X			2,084
108	CONJ. HAB. LIMACHE	X				X				
109	BONANZA	X				X				
110	ANDES	X					X			40

* No damage or no information about damage.

TABLE 5.1 (cont.) OBSERVED DAMAGE IN VIÑA DEL MAR

DATA SHEET	BUILDING	STRUCTURAL DAMAGE				NONSTRUCTURAL DAMAGE				COST OF REPAIR 10^3 pesos
		NONE*	LIGHT	MODERATE	SEVERE	NONE*	LIGHT	MODERATE	SEVERE	
111	ARRECIFES	X				X				
112	ISCAVAS	X				X				
113	GELLONA	X				X				
114	FENIX	X				X				
115	AV. PERU	X				X				
116	BABURIZZA	X				X				
117	VIÑA OESTE	X				X				
118	EUROSOL	X				X				
119	BCO. DEL TRABAJO	X					X			139
120	BCO. DEL ESTADO	X				X				
121	BCO. CONCEPCION	X				X				
122	COUSIÑO	X				X				
123	ARUBA	X				X				
124	HONOLULU	X				X				
125	CALETA ABARCA	X				X				
126	MALAU TARU	X				X				
127	REÑACA PLAYA CLUB	X				X				
128	NUEVO CENTRO 2	X				X				
129	POB. LORD COCHRANE	X				X				
130	POB. LORD COCHRANE	X				X				
131	POB. LORD COCHRANE	X				X				
132	POB. LORD COCHRANE	X				X				
133	MAR DE CHILE	X				X				
134	COOP. BENIDORM	X				X				
135	MERANO	X				X				
136	ESMERALDA	X				X				
137	MONACO		X				X			256
138	PALERMO	X				X				
139	VILLA ANAKENA	X				X				
140	HOTEL O'HIGGINS	X					X			3,319
141	COVADONGA	X				X				
142	1 ORIENTE 87	X				X				
143	VERDE MAR	X					X			160
144	ANGAMOS	X				X				
145	NAUTICO	X				X				
146	PLEAMAR	X				X				
147	LIGURIA	X				X				
148	BAGNARA	X				X				
149	FAURA	X				X				
150	POB. LORD COCHRANE	X				X				
151	POB. LORD COCHRANE	X				X				
152	POB. LORD COCHRANE	X				X				
153	POB. LORD COCHRANE	X				X				
154	POB. EMPART	X				X				
155	POB. EMPART	X				X				
156	POB. EMPART	X				X				
157	POB. EMPART	X				X				
158	LOS OLMOS	X				X				
159	PRUNOTTO	X				X				
160	SAN JOSE	X				X				
161	POB. LOS LIMONALES		X				X			
162	POB. LOS LIMONALES		X				X			23,786
163	BARRIOS			X				X		
164	BONANZA	X				X				
165	VIÑA SOL	X				X				

* No damage or no information about damage.

TABLE 5.1 (cont.) OBSERVED DAMAGE IN VIÑA DEL MAR

DATA SHEET	BUILDING	STRUCTURAL DAMAGE				NONSTRUCTURAL DAMAGE				COST OF REPAIR 10^3 pesos
		NONE*	LIGHT	MODERATE	SEVERE	NONE*	LIGHT	MODERATE	SEVERE	
166	EIMAR	X				X				
167	CANAL BEAGLE K5				X				X	150,000
168	CANAL BEAGLE H.A.				X				X	1,198,500
169	CANAL BEAGLE J5				X				X	36,500
170	NIETO	X				X				
171	COVADONGA	X				X				
172	COOP. BENIDORM	X				X				
173	PAGODA	X					X			
174	MONTEGRANDE	X				X				
175	CONJ. HAB. LIMACHE	X				X				
176	AGUA SANTA	X				X				
177	SANTILLANA DEL MAR		X				X			1,175
178	TIVOLI	X				X				

* No damage or no information about damage.

TABLE 5.2 STRUCTURAL INDICES

DATA SHEET	BUILDING	AREA OF COLUMNS (cm^2)	AREA OF WALLS X-DIR (cm^2)	AREA OF WALLS Y-DIR (cm^2)	CRITICAL LEVEL	FLOOR AREA ABOVE LEVEL (m^2)	I_1 (cm^2/m^2)	I_2 (kg/cm^2)
1	PLAZA DEL MAR	12250	359000	277262	1	20131	13.77	69.53
3	TORRES DEL SOL	0	207600	140700	3	10795	13.04	76.72
5	TORRES DE MIRAMAR	22721	176544	142419	2	10144	14.04	61.42
6	MARINA REAL	17700	248200	184800	1	9143	20.21	45.15
7	TORRES DEL PACIFICO	71664	232600	194940	1	7957	24.50	29.85
8	MAR DEL SUR	0	159900	127500	1	7015	18.18	55.02
9	ACAPULCO	450	241401	218500	1	8565	25.51	39.12
11	HANGA ROA	12900	463042	422321	1	14526	29.07	33.38
12	DON JOSE	29150	89580	82700	1	4873	16.97	43.57
13	FESTIVAL	0	312837	282775	1	10267	27.54	36.31
14	PUESTA DE SOL	0	135500	69000	2	3357	20.55	48.65
15	O'HIGGINS	10050	161400	71550	1	3965	18.05	48.59
16	GAL. LIBERTAD CENTRO	20750	96875	98500	2	5484	17.67	46.62
17	VICUÑA MACKENNA	3400	140300	104350	1	3581	29.14	33.23
18	JOSE FCO. VERGARA	116484	294330	238875	1	5552	43.02	15.62
19	ATALAYA	5400	138600	110600	1	4348	25.43	37.49
20	CORAL	19200	89600	61700	1	7037	8.77	86.99
21	MEDITERRANEO	0	174375	97250	1	4300	22.62	44.22
22	PLAZA	6000	118125	107350	3	2991	35.89	26.39
24	SOLIMAR	2400	118000	91800	1	3100	29.61	32.91
25	NUEVO CENTRO 1	400	63600	63550	2	2773	22.92	43.36
26	MAYA	35390	95300	68100	2	1679	40.56	16.22
27	TOSSA DEL MAR	0	97750	66500	1	1686	39.45	25.35
28	CENTRO MAR	4500	66500	107125	1	3090	21.52	43.52
30	VILLA SOFIA	20800	70400	45000	1	4050	11.11	61.55
31	MILLALEBU	4400	99450	60765	1	1842	32.99	28.26
32	ANGELMO	17750	98500	87900	1	2374	37.02	22.47
33	ECUAMAR	0	111700	81525	2	2684	30.37	32.92
34	EL ESCORIAL	4625	433275	195125	1	5908	33.03	29.58
35	DANUBIO	2975	203000	117413	1	3610	32.53	29.99
36	FLAMINGO	4800	111700	109950	3	2510	43.81	21.87
38	ISAMAR	600	293283	224391	1	5662	39.63	25.16
39	ARLEGUI	8050	215625	120000	3	4034	29.74	31.51
40	ANTUMALAL	2188	111125	92625	1	4520	20.49	47.68
41	ULTRAMAR	9800	82800	107295	1	2922	28.33	31.56
42	VILLA REAL	0	85600	65850	1	2243	29.36	34.06
43	RAPA NUI	4200	103300	30800	2	1653	18.63	47.24
44	ITALIA	9600	177375	346750	3	5132	34.56	27.45
45	ITALIA	0	122875	152000	3	2536	48.46	20.64
46	LIMARI	6000	48700	36500	2	1418	25.74	33.36
47	DON BENJAMIN - ROSA	17325	172495	156345	1	3477	44.96	20.02
48	LAS PALMAS	26500	139700	85000	1	5085	16.72	45.61
49	COPACABANA	0	208000	99750	1	6448	15.47	64.64
50	MONTE CARMELO	13150	153463	132663	1	3864	34.34	26.50
51	MILLAHUE	2400	54200	50200	1	1192	42.11	22.67
53	ARCADIA	7200	226100	0	3	4681	0.00	650.13
54	RAPALLO	6000	155150	200600	1	4585	33.84	28.45
55	BCO. ESPAÑOL CHILE	3600	113400	72700	3	2119	34.31	27.77
56	SAN ANTONIO CENTRO	0	115500	100600	3	1730	58.14	17.20
57	ALTAMAR	8000	102650	90800	1	2378	38.18	24.07
58	LOS ALAMOS	2400	57500	53350	2	2078	25.68	37.27
59	LAS TERRAZAS	0	90900	80600	1	2213	36.42	27.46
60	EL MAR	0	180000	108500	1	3521	30.82	32.45
61	ANCONA	0	51850	48000	1	1341	35.81	27.93
62	MARINA	47650	302300	201000	1	6520	30.83	26.22

TABLE 5.2 (cont.) STRUCTURAL INDICES

DATA SHEET	BUILDING	AREA OF COLUMNS (cm^2)	AREA OF WALLS X-DIR (cm^2)	AREA OF WALLS Y-DIR (cm^2)	CRITICAL LEVEL	FLOOR AREA ABOVE LEVEL (m^2)	I_1 (cm^2/m^2)	I_2 (kg/cm^2)
63	SAUSALITO	6200	90000	88800	1	2111	42.06	22.22
64	FONTANA	4200	64000	42000	1	1408	29.84	30.47
65	ANTILCO	3000	74800	60915	1	1989	30.62	31.12
66	EL FARO (REÑACA)	2000	49105	48250	1	1028	46.95	20.45
68	LAS ACHIRAS	2800	93600	65100	1	2264	28.75	33.35
69	MALLORCA	8000	63900	56700	1	2842	19.95	43.92
70	CASTILLA	4400	138000	41800	1	1974	21.17	42.74
71	RIVIERA	7200	60000	81600	2	1596	37.59	23.75
75	BRASILIA	0	85500	68600	1	1659	41.36	24.18
76	EL FARO (VIÑA)	0	51200	28600	1	533	53.62	18.65
77	ARMINSA	1813	73200	61800	1	1291	47.88	20.29
78	PLENO MAR	1875	71625	67875	1	1568	43.28	22.49
79	DALCAHUE	5400	72875	58375	1	1586	36.80	24.87
80	GRAN PRIX	0	81600	47000	1	1545	30.42	32.87
81	BCO. CRED. E INVER.	0	72510	64560	2	1554	41.56	24.06
82	DINAMARCA	0	78900	28200	2	1386	20.34	49.16
83	CRISOL	4375	127125	102500	1	2450	41.84	22.92
84	MONTECARLO	7500	160000	112300	1	4480	25.07	37.40
85	VON SCHROEDERS	0	110300	94900	1	2664	35.62	28.07
86	ROTONDA	10950	177500	147000	1	3222	45.63	20.40
87	COSTA AZUL	10000	143906	140034	1	6561	21.34	43.73
88	ACHAO	0	68350	62912	2	1384	45.46	22.00
90	EL MARQUES	2400	67500	47100	1	1776	26.52	35.88
91	CAPRI	8700	40800	29000	1	1074	27.01	28.48
92	POB. LORD COCHRANE	9600	74400	38000	1	2555	14.87	53.68
93	POB. LORD COCHRANE	7200	83600	38400	1	2660	14.44	58.33
95	POB. LORD COCHRANE	7600	79400	38000	1	2579	14.73	56.56
97	MARRACHINI	6000	58000	50625	1	1227	41.25	21.67
98	ALVAREZ	17200	108450	175500	1	1636	66.31	13.02
99	EL CIPRES	1750	68625	62000	1	1081	57.34	16.96
100	COUVE	61375	319000	294650	2	7697	38.28	21.62
101	VIÑA RIO	0	50750	48750	1	1068	45.64	21.91
103	SOTAVENTO	800	103000	53300	1	1276	41.77	23.59
104	LAS BRISAS	12000	162300	101850	1	4565	22.31	40.10
105	LAS TORCAZAS	0	77800	92200	1	1904	40.87	24.47
106	NIZA	4600	43500	29000	1	947	30.62	28.19
108	CONJ. HAB. LIMACHE	14400	36600	31000	1	1640	18.90	36.13
109	BONANZA	3750	109000	94250	1	2772	34.00	28.29
110	ANDES	7300	91900	44200	1	1263	34.99	24.53
112	ISCAVAS	6000	119000	72600	2	1758	41.30	22.37
113	GELLONA	0	93350	74800	1	723	103.42	9.67
114	FENIX	5800	56100	31500	2	626	50.30	16.79
115	AV. PERU	5500	59500	35100	1	1357	25.86	33.43
117	VIÑA OESTE	0	37000	20000	1	1526	13.11	76.29
118	EUROSOL	63500	24220	19800	1	2125	9.32	25.51
119	BCO. DEL TRABAJO	21425	44650	36500	1	5980	6.10	103.23
120	BCO. DEL ESTADO	26750	179050	172875	2	2927	59.06	14.66
121	BCO. CONCEPCION	0	72625	61000	1	1174	51.96	19.25
123	ARUBA	0	84625	67125	1	1053	63.74	15.69
124	HONOLULU	3000	98800	85300	1	1724	49.48	19.52
125	CALETA ABARCA	900	66300	62600	1	2083	30.06	32.80
126	MALAU TARU	8400	56550	54100	2	961	56.32	15.37
127	REÑACA PLAYA CLUB	0	340434	312807	1	4127	75.80	13.19
128	NUEVO CENTRO 2	116400	3600	3600	3	2897	1.24	24.14
129	POB. LORD COCHRANE	10400	56200	47600	1	1641	29.01	28.29

TABLE 5.2 (cont.) STRUCTURAL INDICES

DATA SHEET	BUILDING	AREA OF COLUMNS (cm^2)	AREA OF WALLS X-DIR (cm^2)	AREA OF WALLS Y-DIR (cm^2)	CRITICAL LEVEL	FLOOR AREA ABOVE LEVEL (m^2)	I_1 (cm^2/m^2)	I_2 (kg/cm^2)
130	POB. LORD COCHRANE	7600	84920	42880	1	1862	23.03	36.88
131	POB. LORD COCHRANE	15700	71920	32680	1	1731	18.88	35.79
132	POB. LORD COCHRANE	7600	80932	45630	1	1766	25.84	33.18
133	MAR DE CHILE	0	49800	25700	1	636	40.41	24.75
135	MERANO	2800	77500	66300	1	1421	46.66	20.56
136	ESMERALDA	9600	53700	51408	1	1171	43.90	19.20
137	MONACO	8300	100000	54350	1	1682	32.32	26.84
138	PALERMO	1400	73675	58261	1	1436	40.59	24.06
139	VILLA ANAKENA	2400	30000	40180	B	1139	26.33	35.16
141	COVADONGA	0	101100	94500	1	1127	83.86	11.93
142	1 ORIENTE 87	11000	59700	38300	1	766	49.98	15.54
143	VERDE MAR	50800	302120	223570	1	4630	48.29	16.87
144	ANGAMOS	5600	86625	124500	1	1138	76.15	12.34
145	NAUTICO	14740	95300	61000	1	1756	34.74	23.18
147	LIGURIA	2200	86800	79800	1	1636	48.79	19.95
148	BAGNARA	12800	111150	85730	1	2856	30.01	28.99
149	FAURA	0	57625	111400	1	977	58.97	16.96
150	POB. LORD COCHRANE	10400	56200	47600	1	1313	36.27	22.63
151	POB. LORD COCHRANE	7600	80932	45630	1	1413	32.30	26.54
152	POB. LORD COCHRANE	7600	84920	42880	1	1489	28.79	29.51
153	POB. LORD COCHRANE	1600	54375	24000	1	616	38.95	24.07
154	POB. EMPART	10600	82500	55500	1	1355	40.95	20.50
155	POB. EMPART	9400	78800	75900	1	1365	55.61	16.00
156	POB. EMPART	11000	57800	38900	1	1366	28.47	27.38
157	POB. EMPART	12500	66600	56800	1	1365	41.61	19.70
159	PRUNOTTO	10780	35600	27500	2	542	50.77	14.15
160	SAN JOSE	4200	66500	32000	2	441	72.56	12.18
163	BARRIOS	10000	65800	53300	1	1053	50.62	16.64
164	BONANZA	10200	56200	39500	1	1164	33.94	23.42
165	VIÑA SOL	9900	28200	27500	1	737	37.33	19.70
166	EIMAR	2500	47500	40250	1	858	46.93	20.06
167	CANAL BEAGLE K5	2800	34960	21700	1	584	37.16	23.84
168	CANAL BEAGLE H.A.	0	75364	17408	1	564	30.87	32.40
169	CANAL BEAGLE J5	1200	19200	12850	1	300	42.83	21.35
171	COVADONGA	13200	66800	77600	1	970	68.84	12.13
174	MONTEGRANDE	8100	126800	193200	1	2643	47.98	19.59
175	CONJ. HAB. LIMACHE	2000	38200	44000	1	883	43.28	21.96

FIGURES

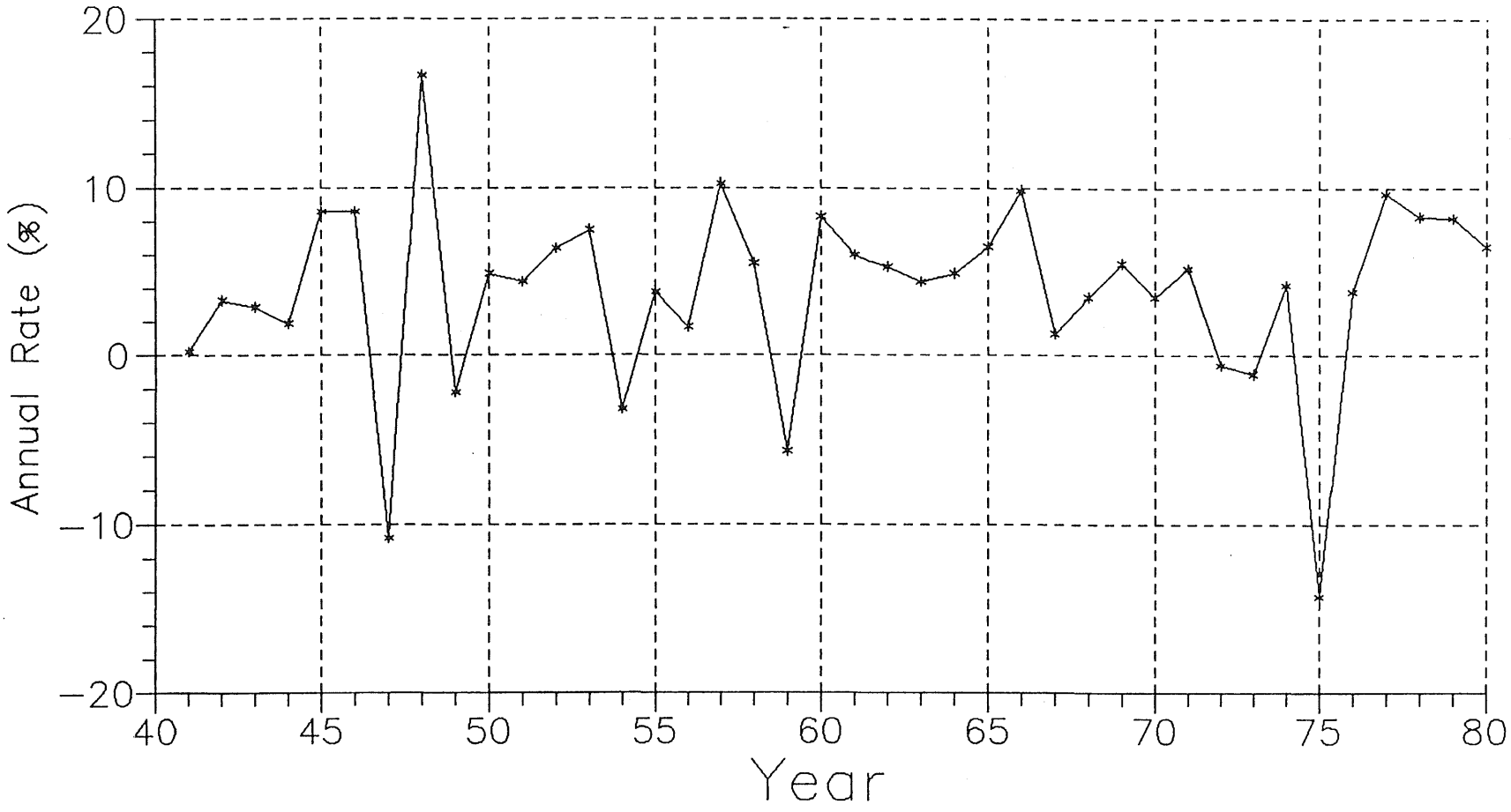


Fig. 2.1 Annual Rate of Growth of the Gross Domestic Product of Chile

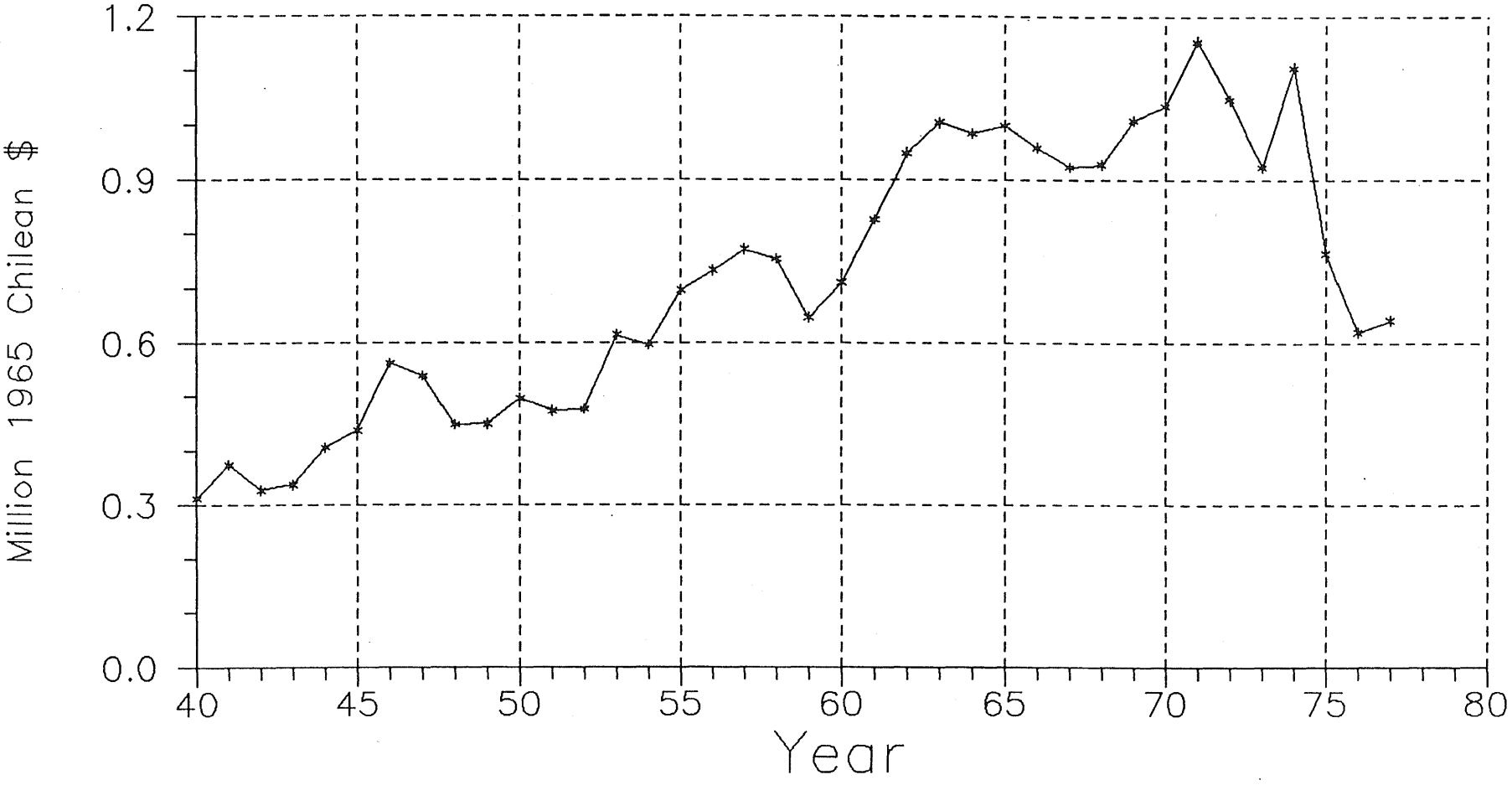


Fig. 2.2 Contribution of the Construction Sector to the Gross Domestic Product

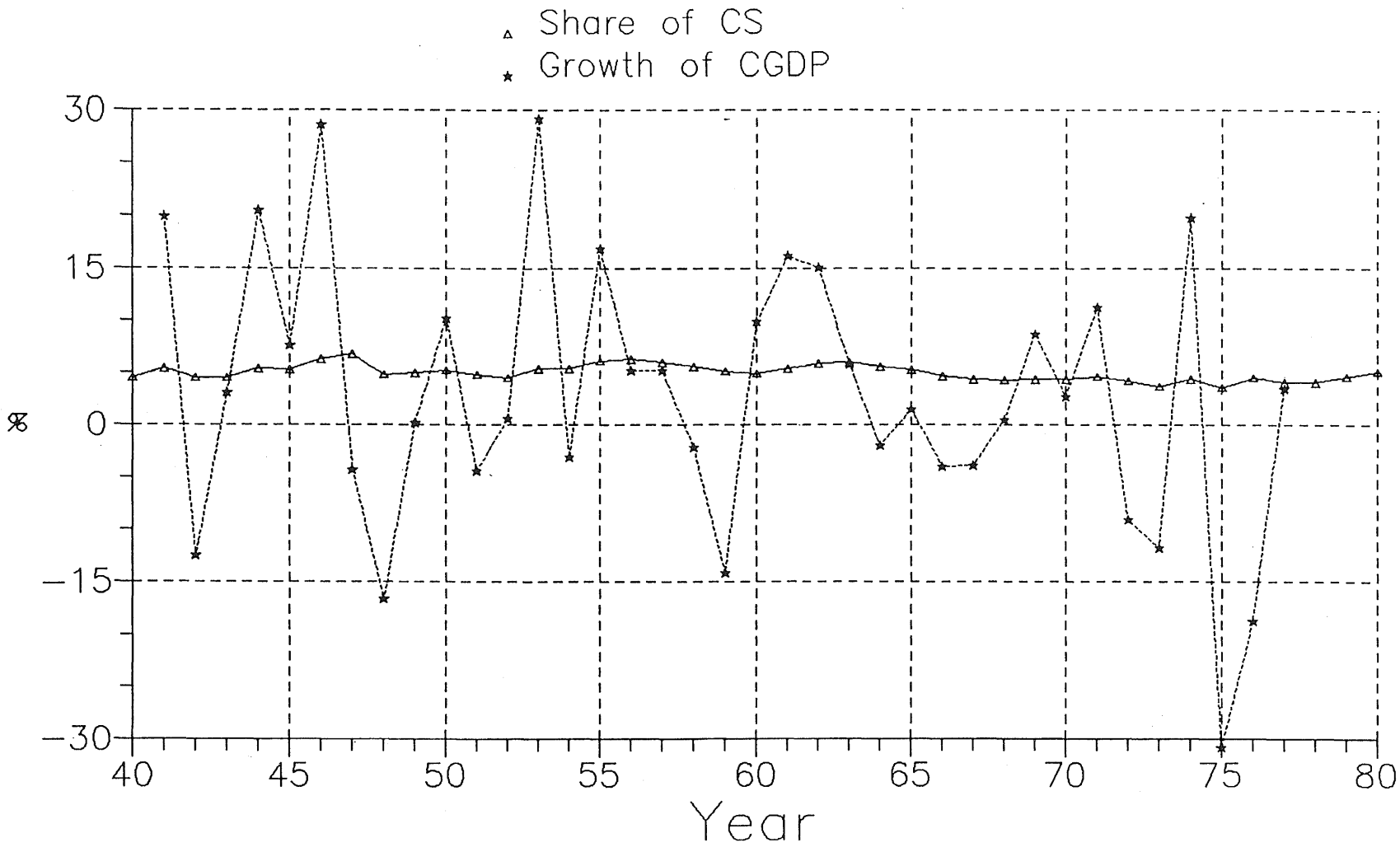


Fig. 2.3 Share of the Construction Sector to the Total Gross Domestic Product and Annual Rate of Growth of the Construction Gross Domestic Product

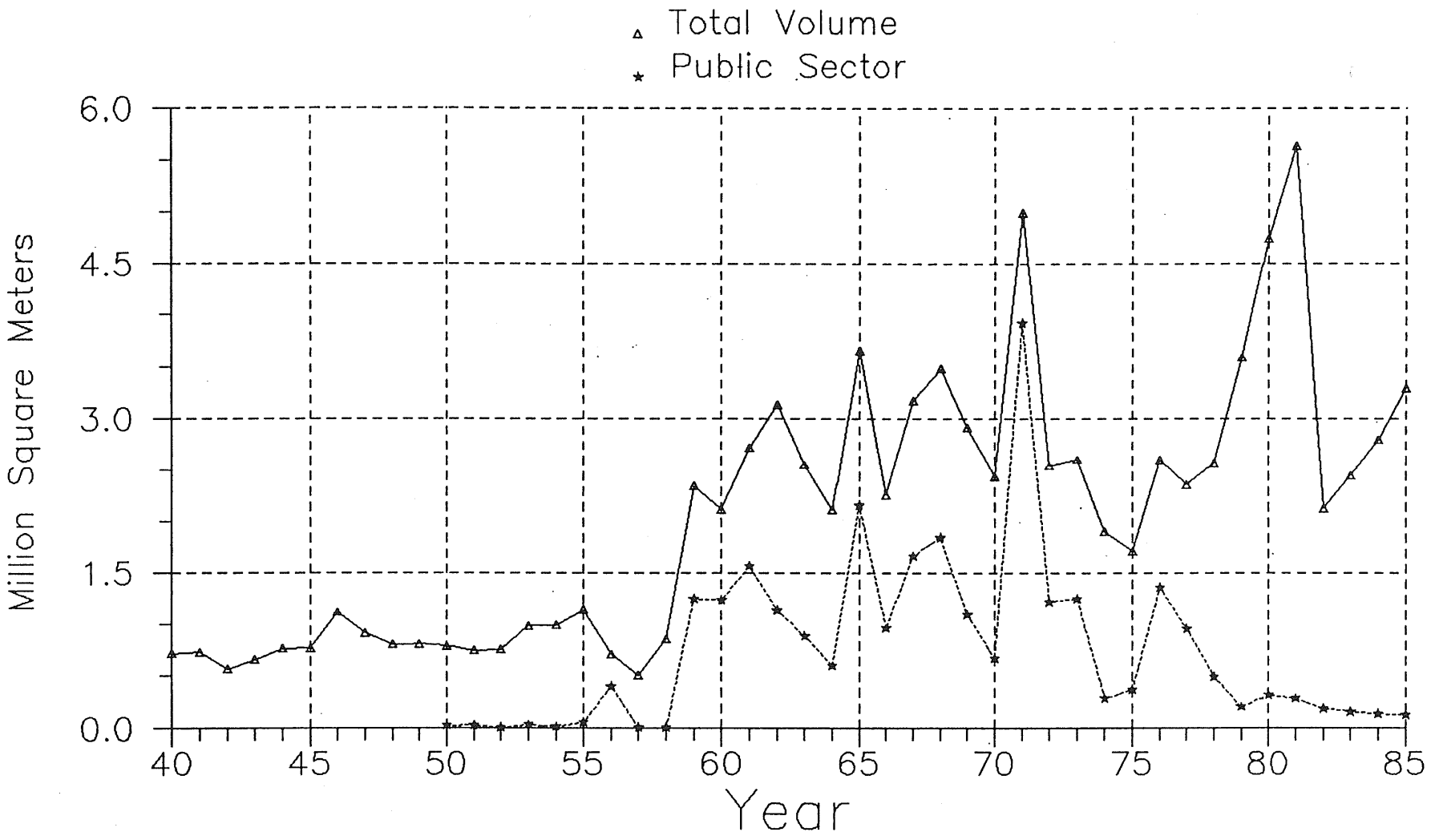


Fig. 2.4 Total and Public Sector Construction

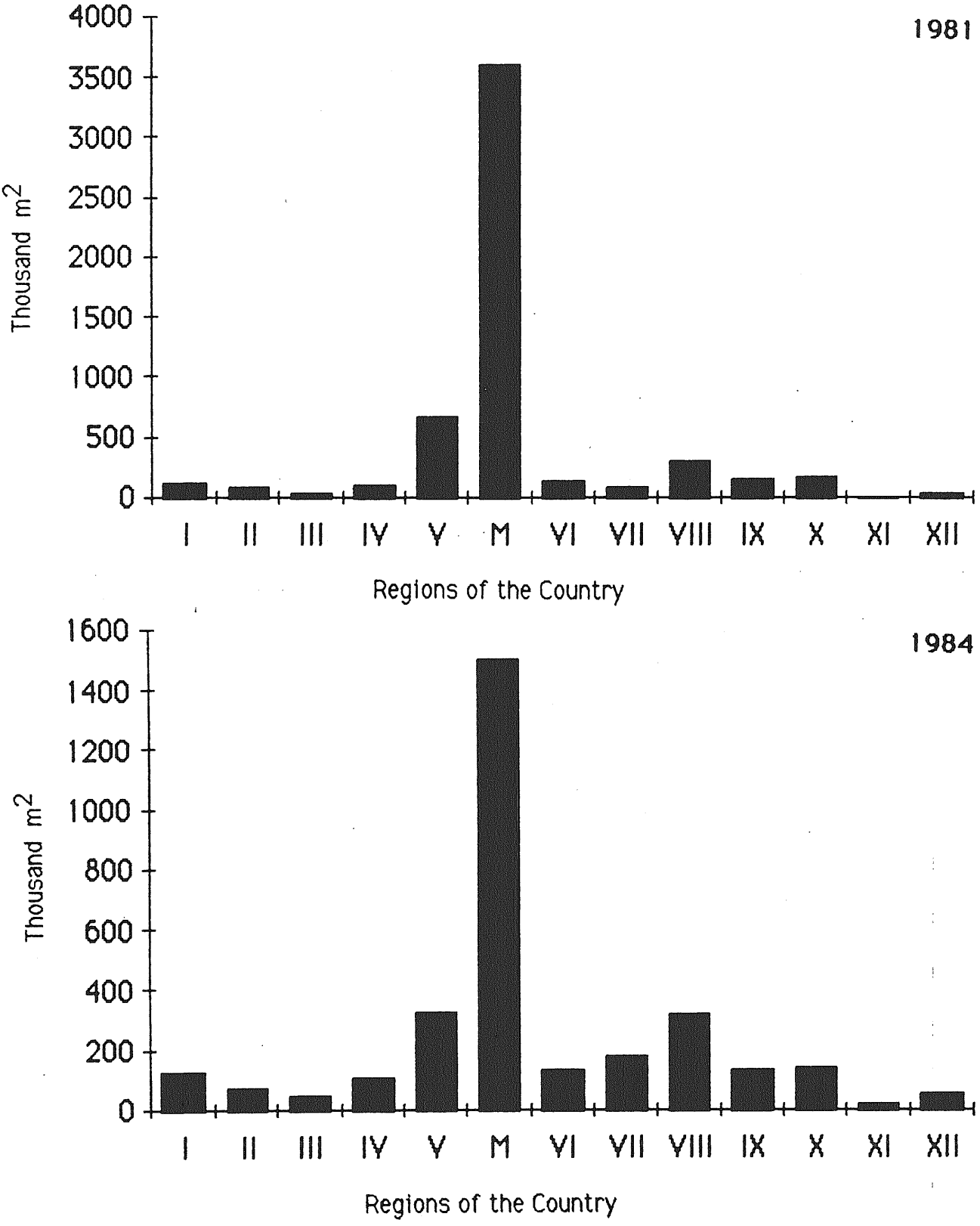


Fig. 2.5 Spatial Distribution of Construction in Chile

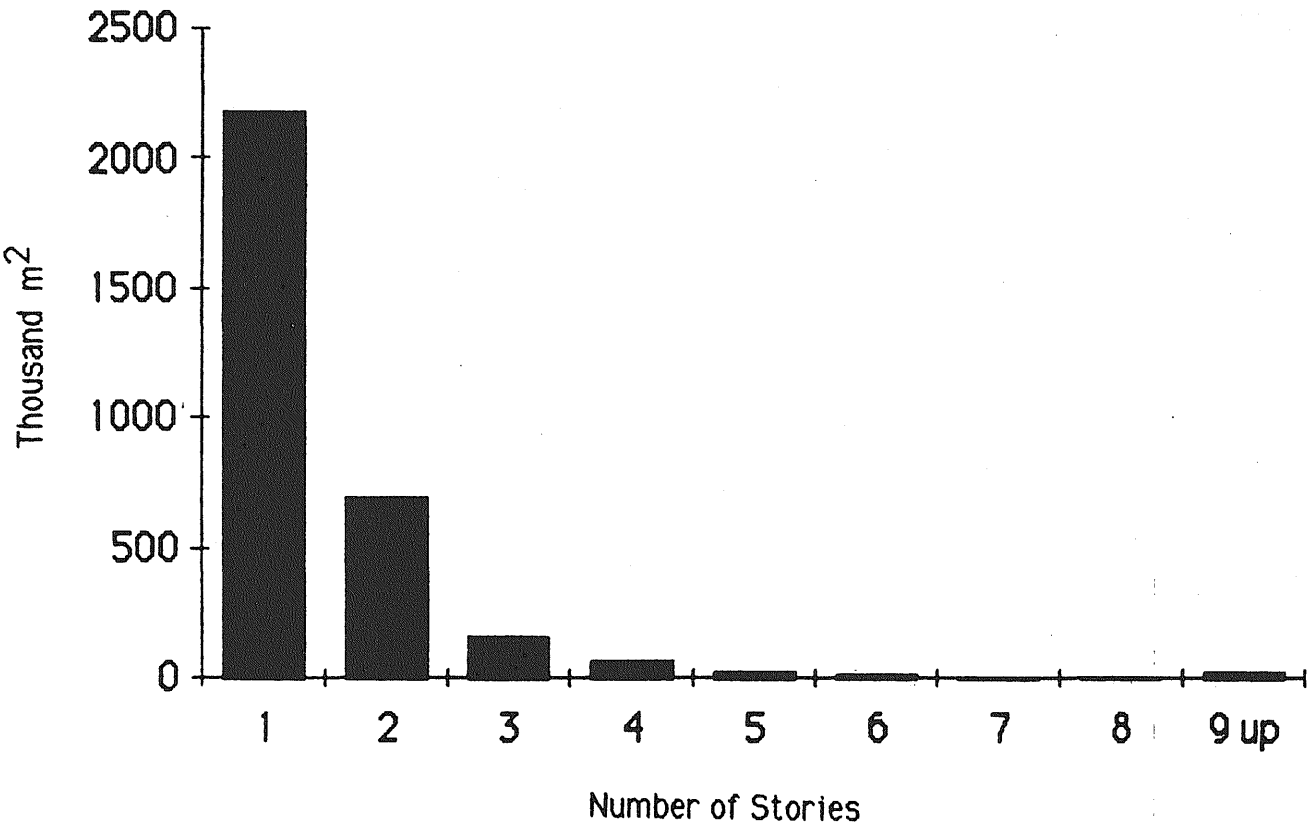


Fig. 2.6 Volume of Construction versus Number of Stories in 1984

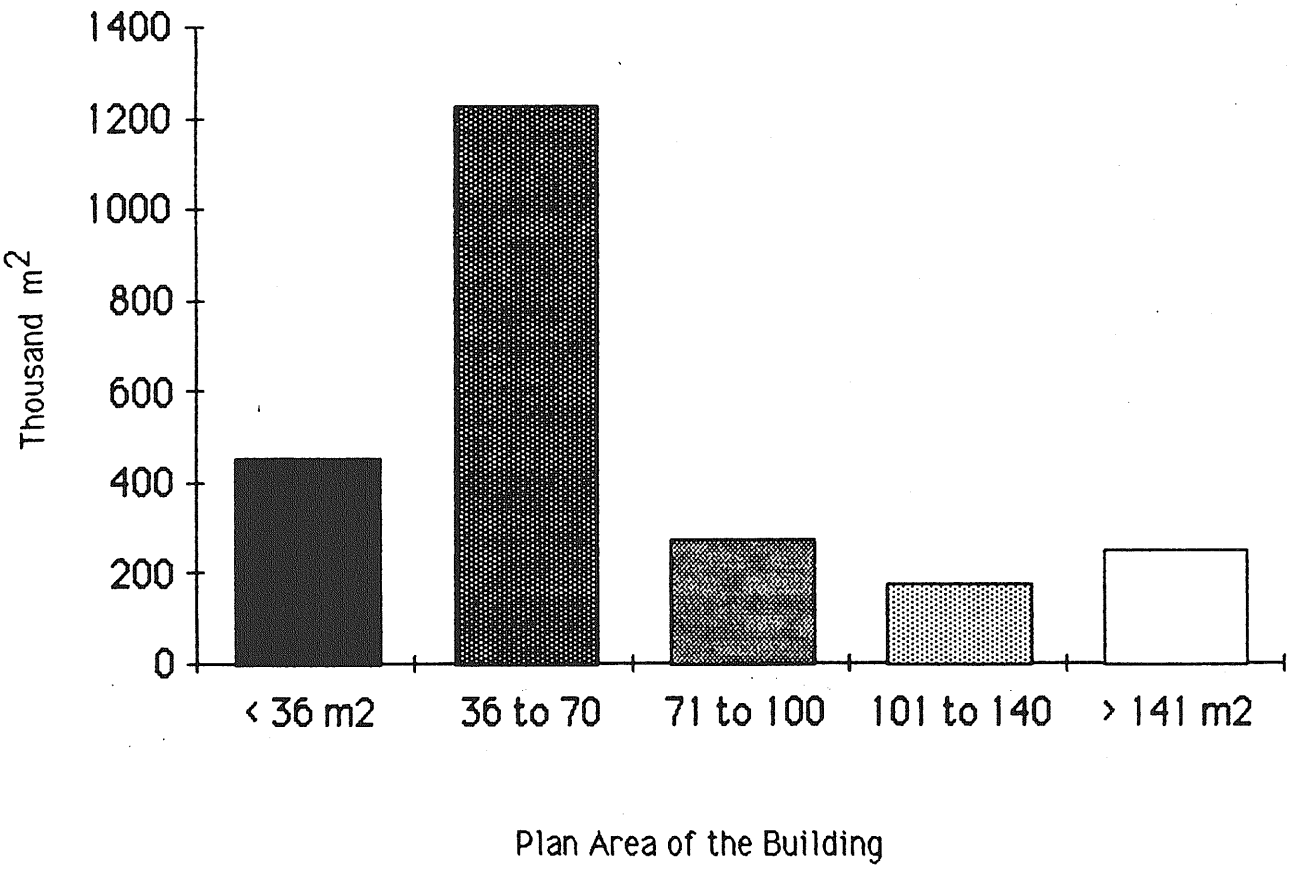


Fig. 2.7 Volume of Construction in 1984 versus Building Plan Area

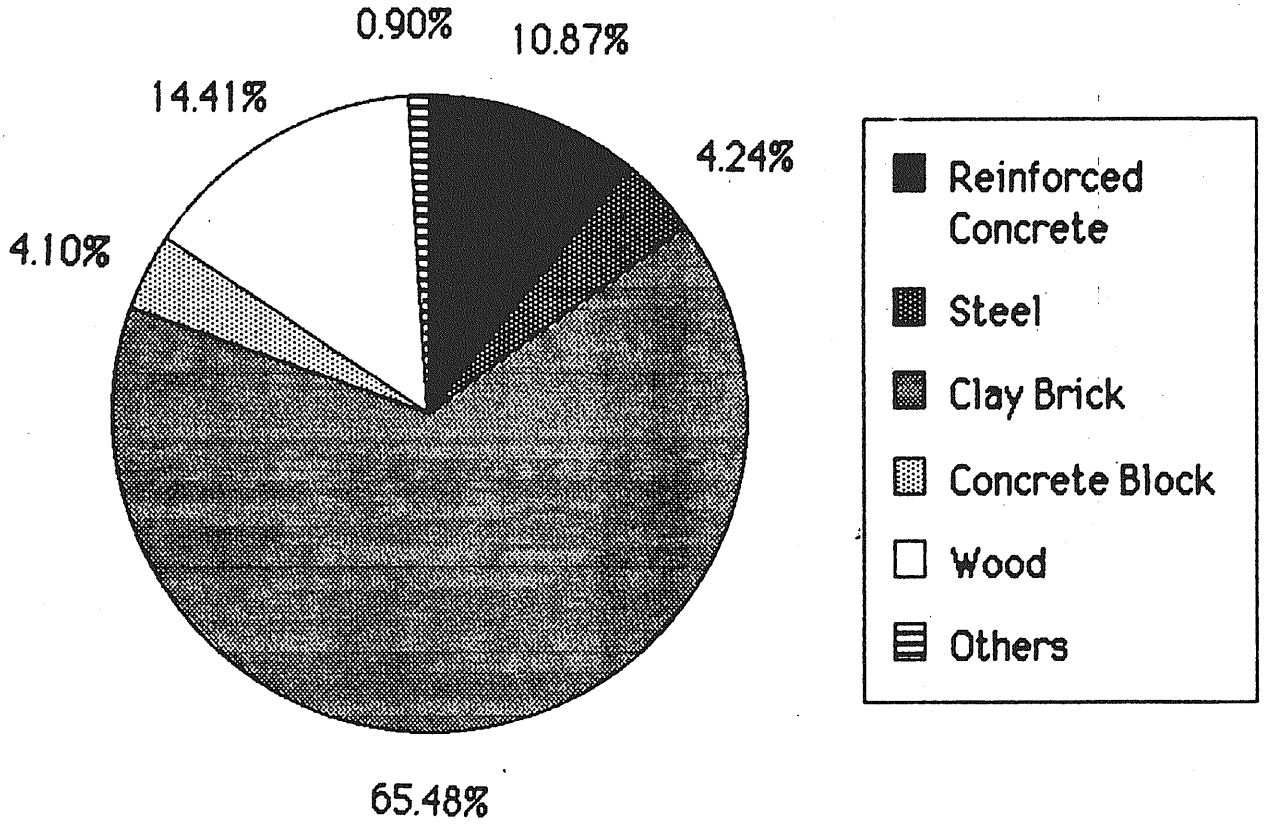


Fig. 2.8 Constructed Area as a Function of Construction Materials in 1984

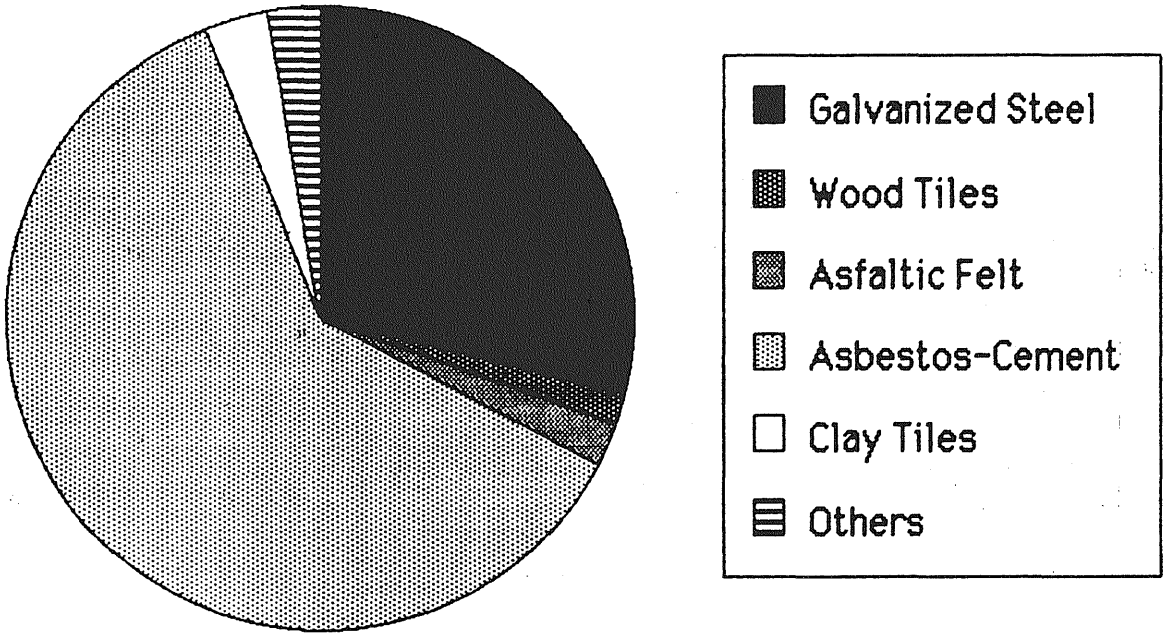


Fig. 2.9 Roof Material Usage in 1984

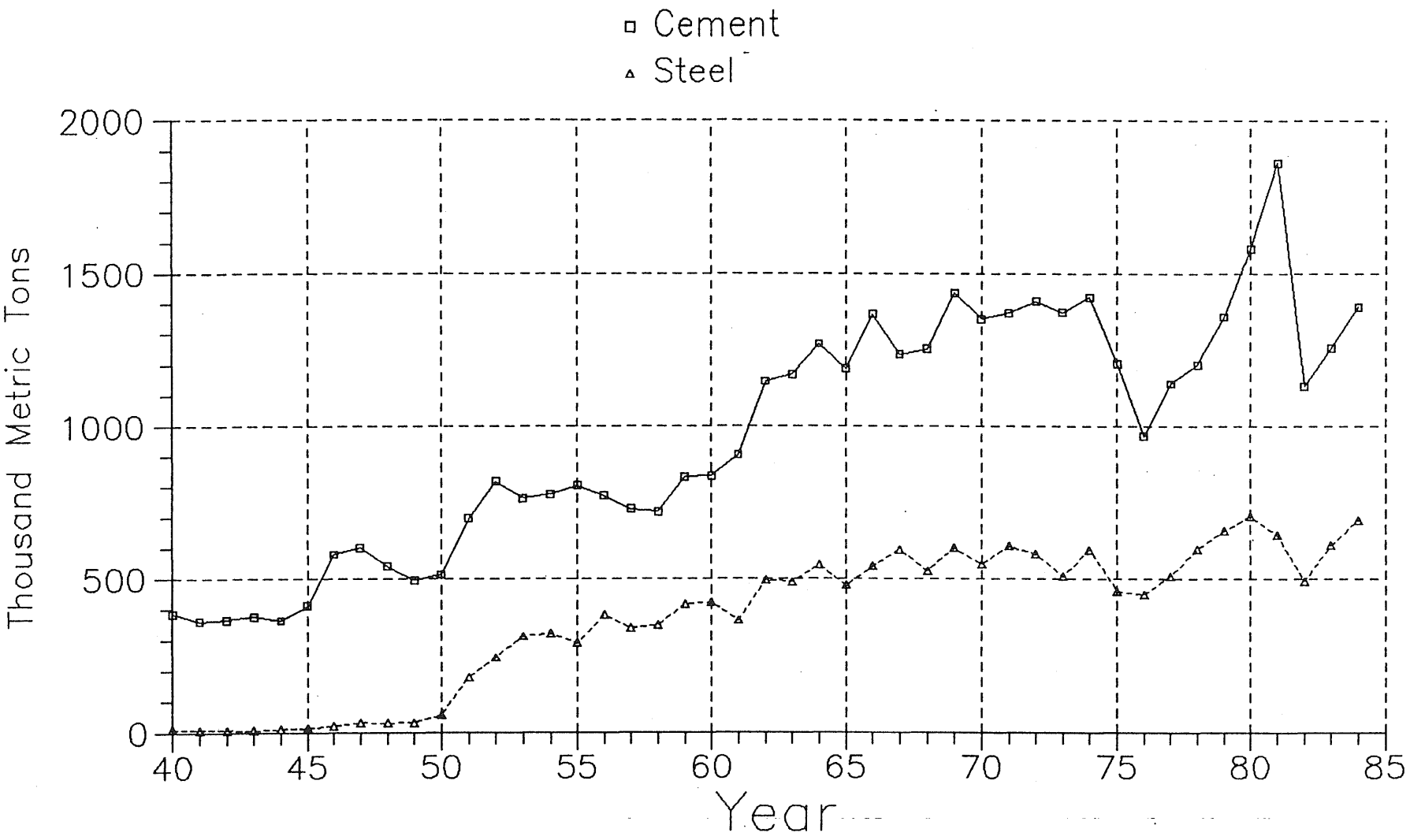


Fig. 2.10 Steel and Cement Production

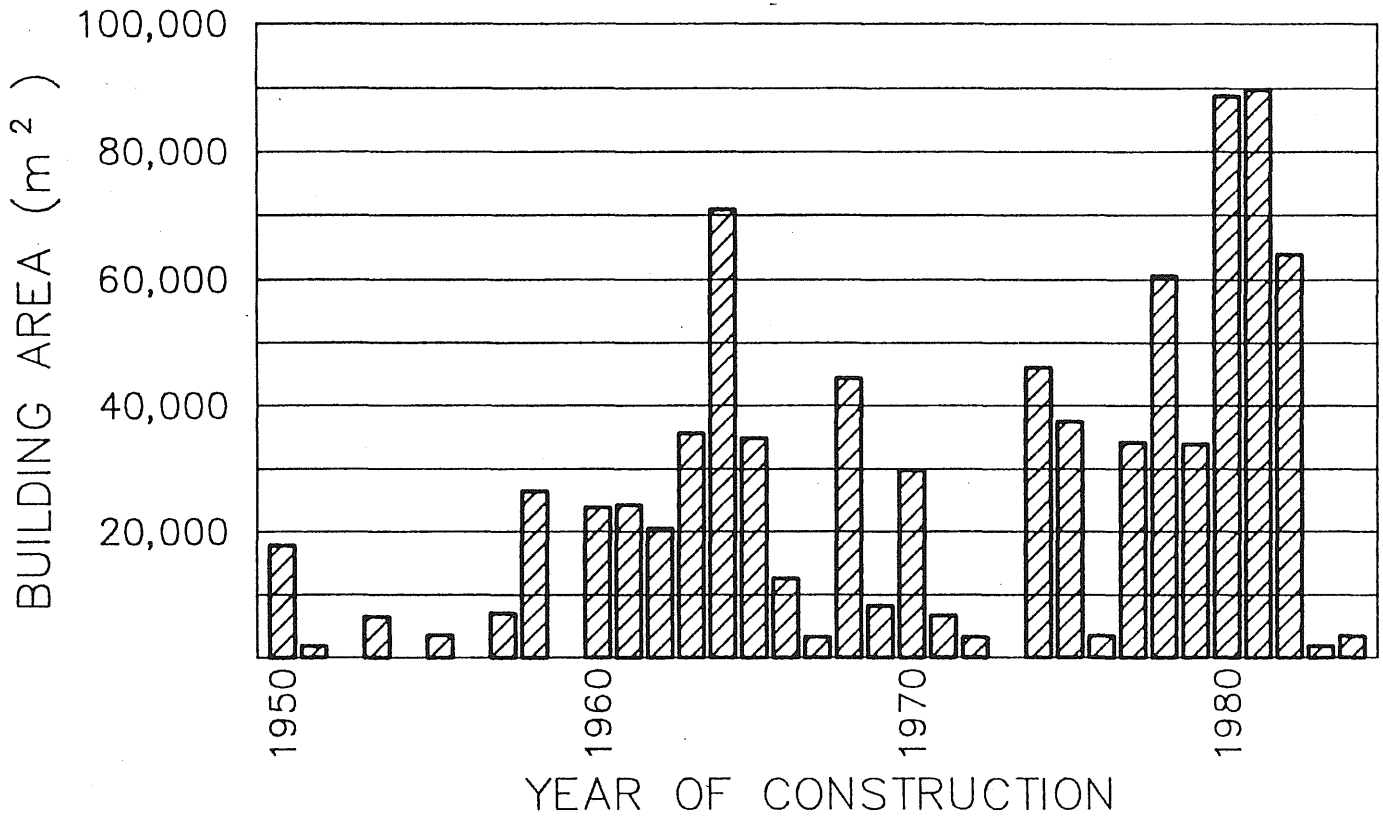


Fig. 3.1 Construction Activity in Viña del Mar

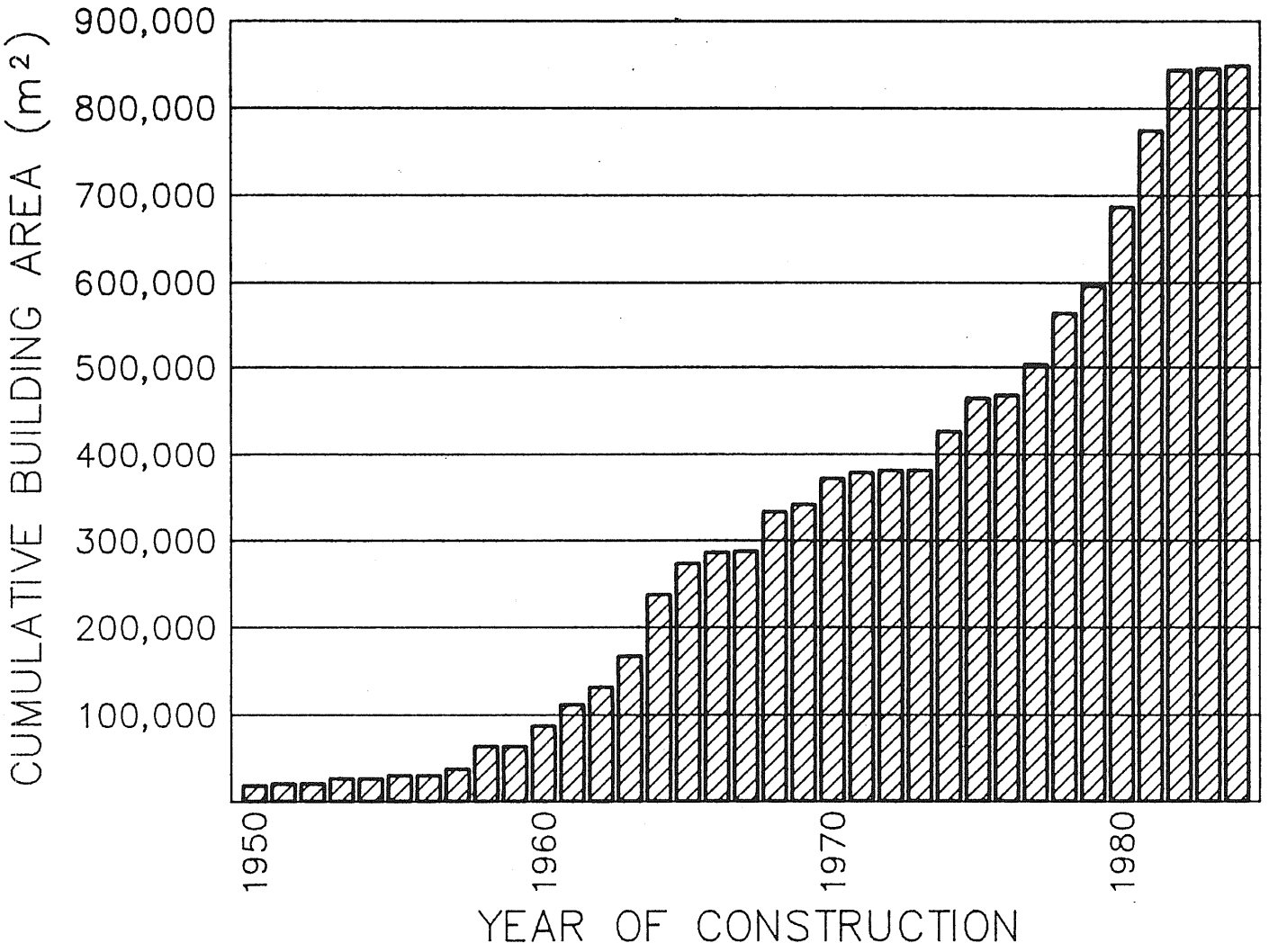


Fig. 3.2 Cumulative Building Construction

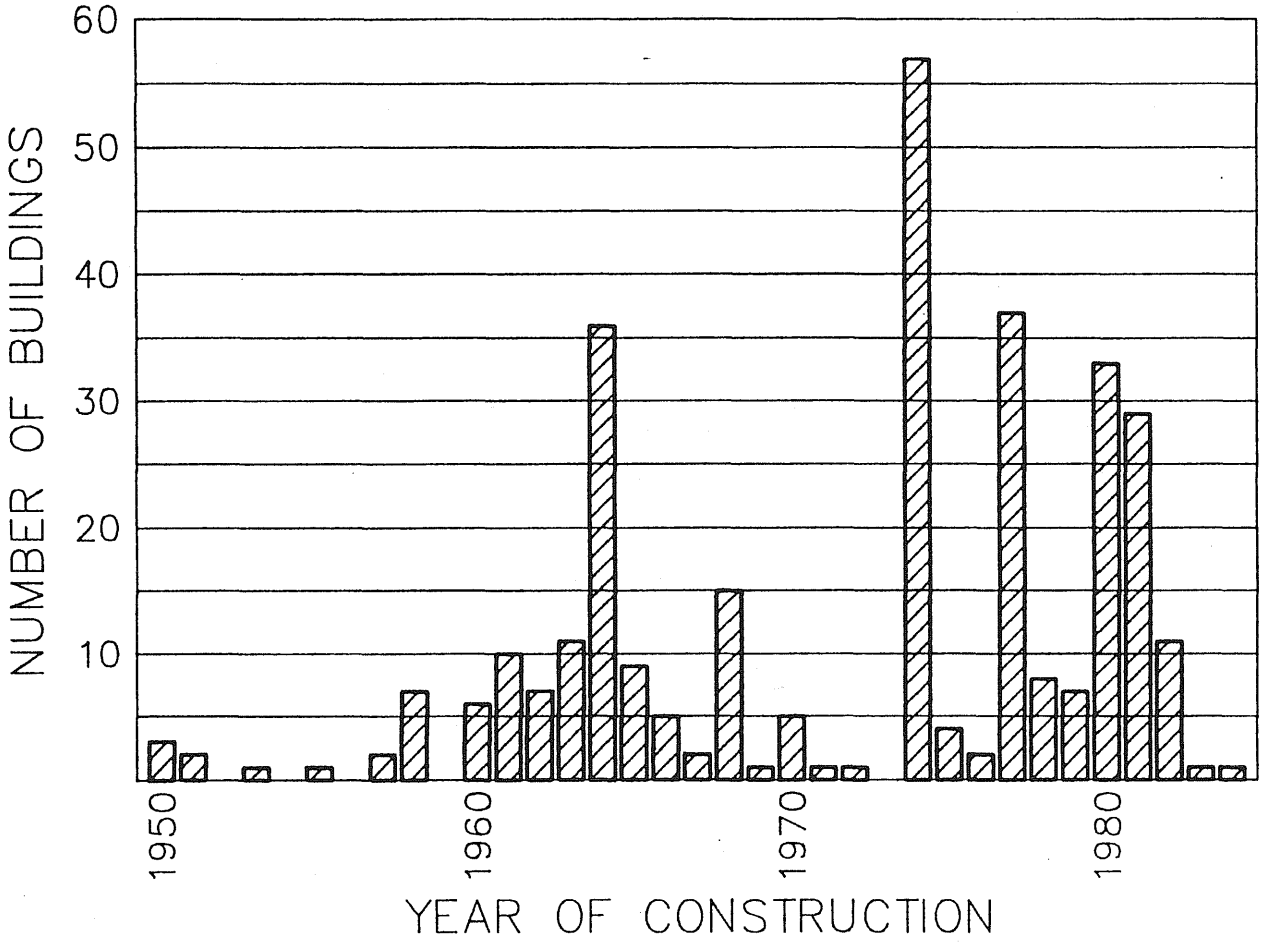


Fig. 3.3 Number of Buildings Constructed between 1950 and 1984

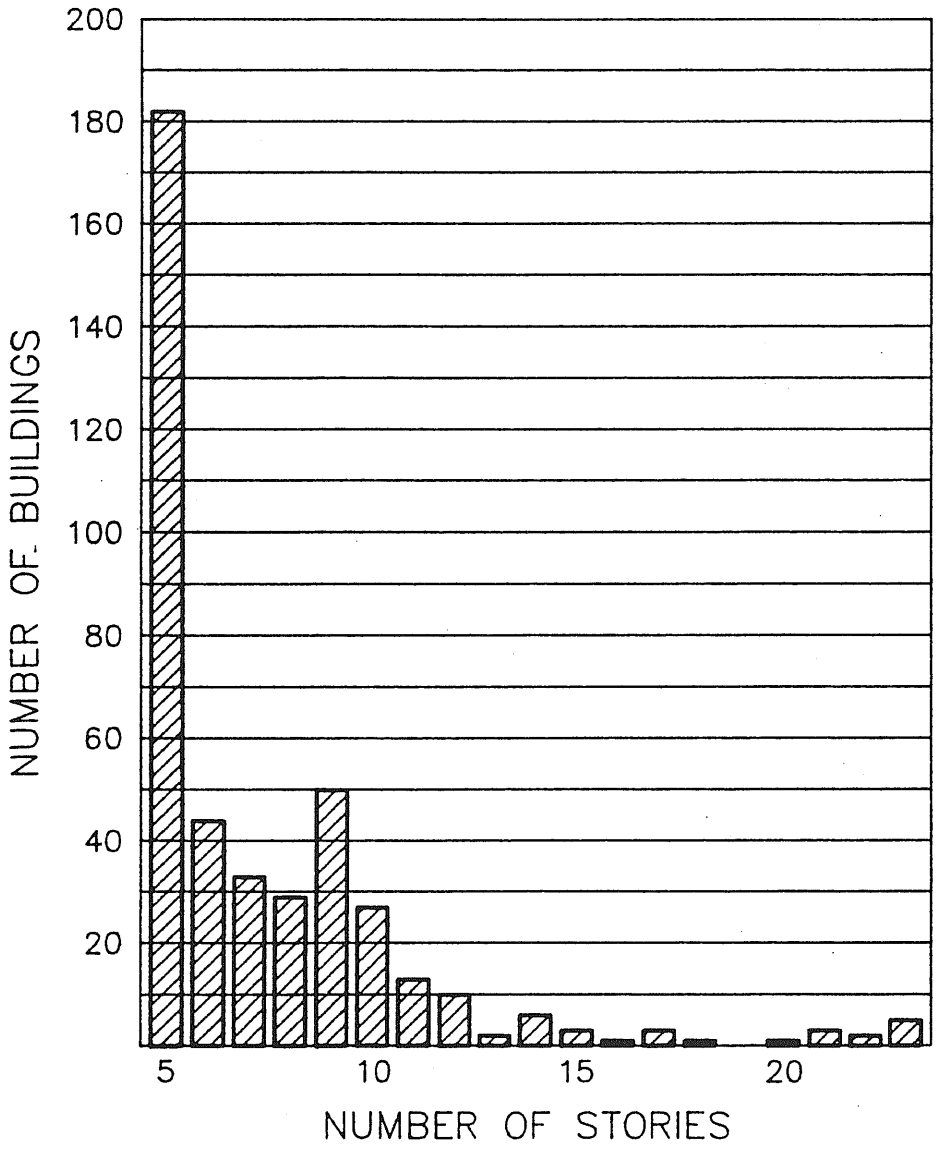


Fig. 3.4 Distribution of Building Inventory with Respect to Height

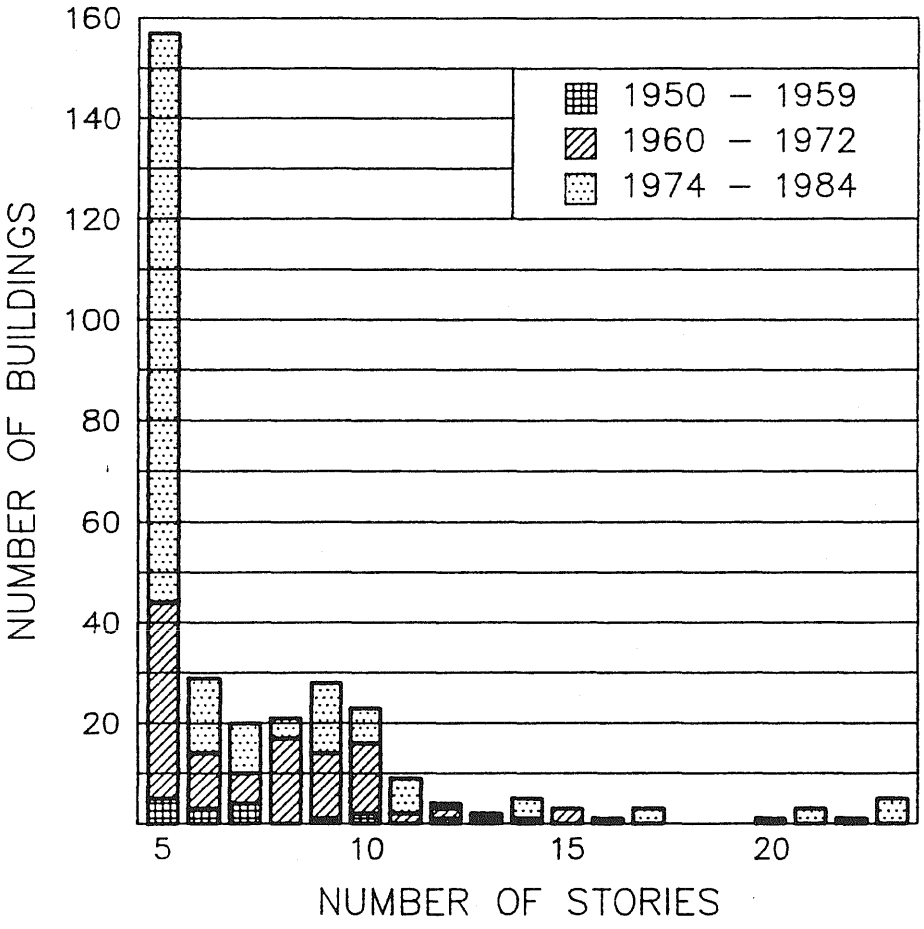


Fig. 3.5 Distribution of Building Inventory with Respect to Height and Age

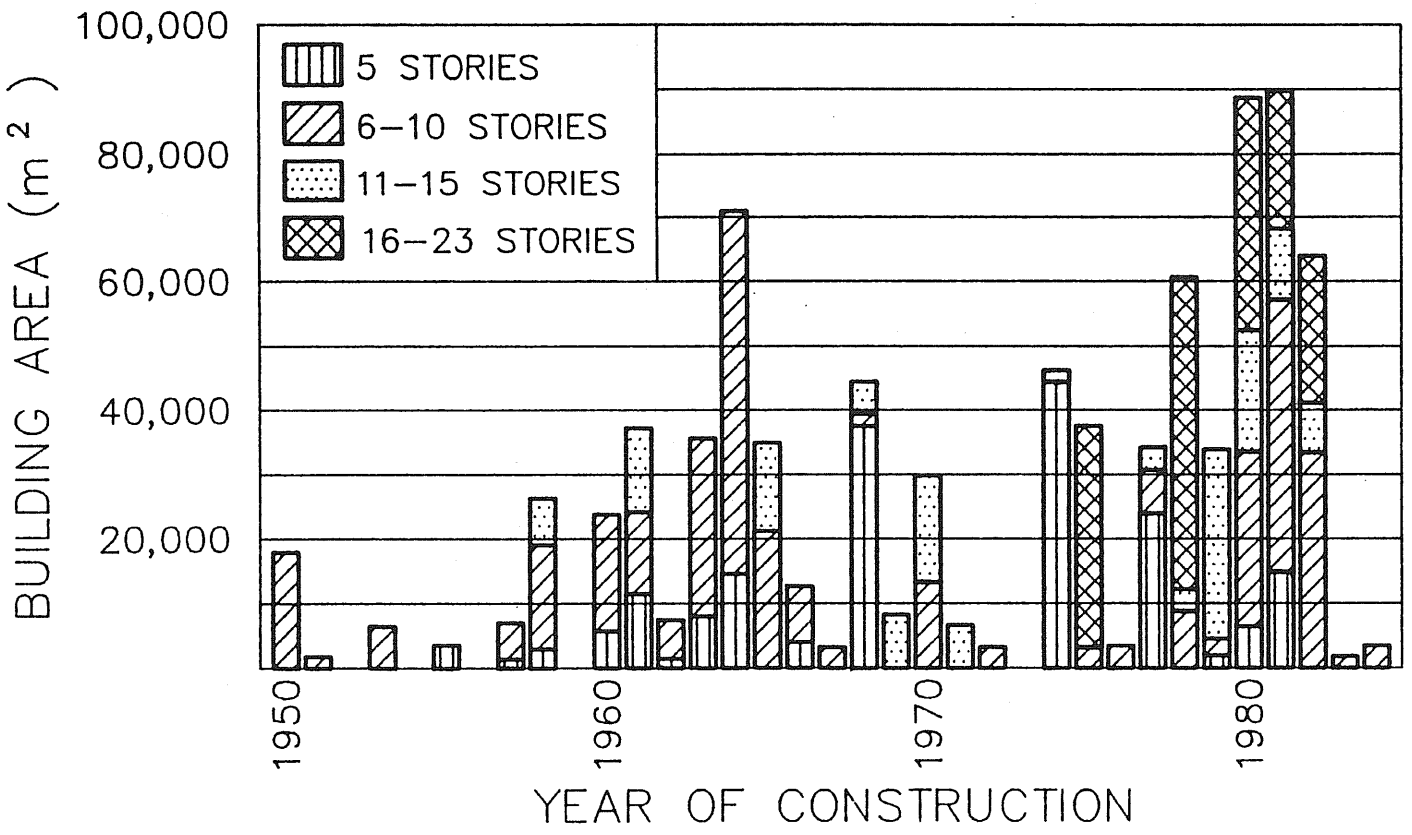


Fig. 3.6 Construction Activity as a Function of Building Height

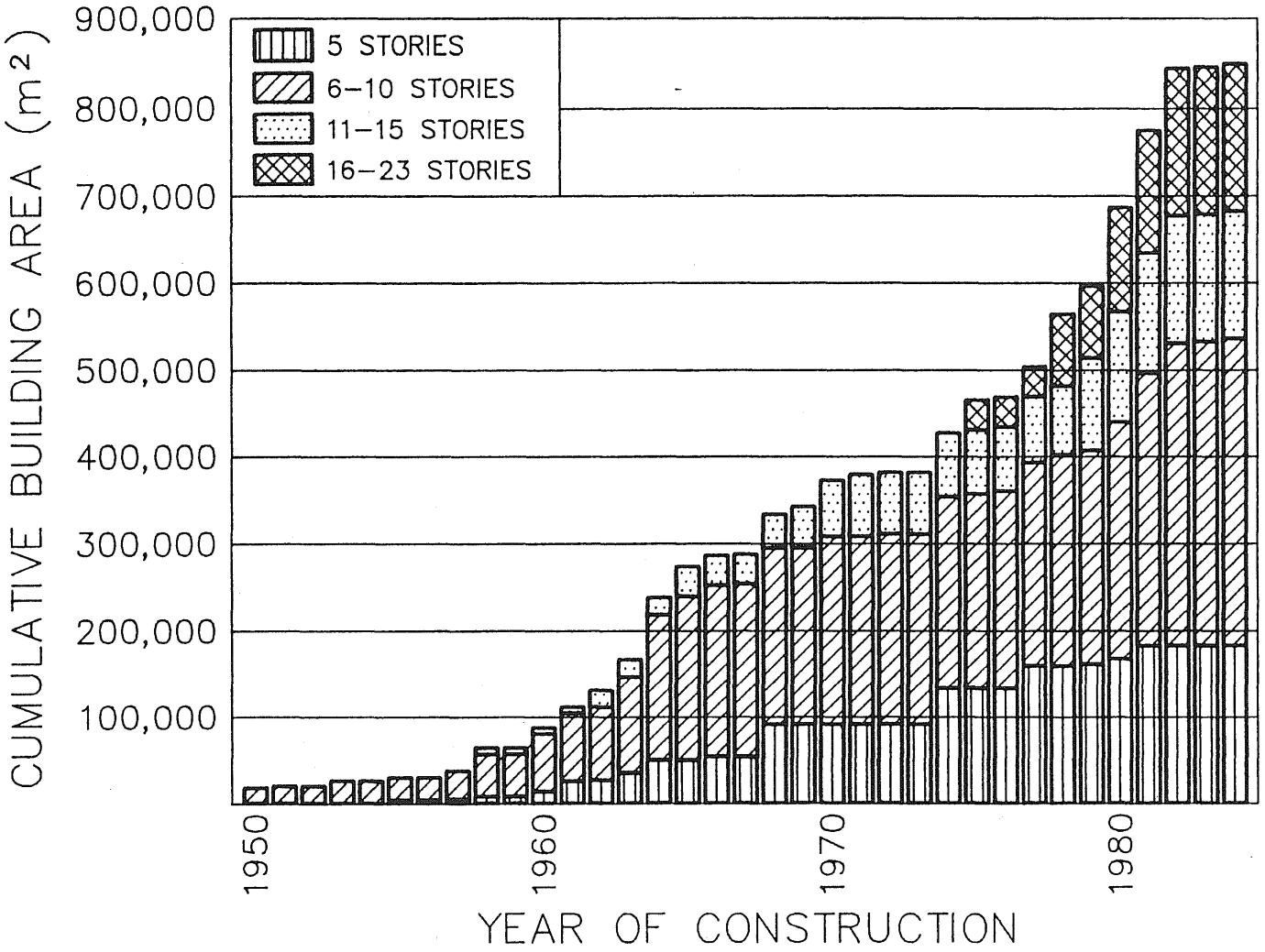


Fig. 3.7 Cumulative Building Construction as a Function of Height

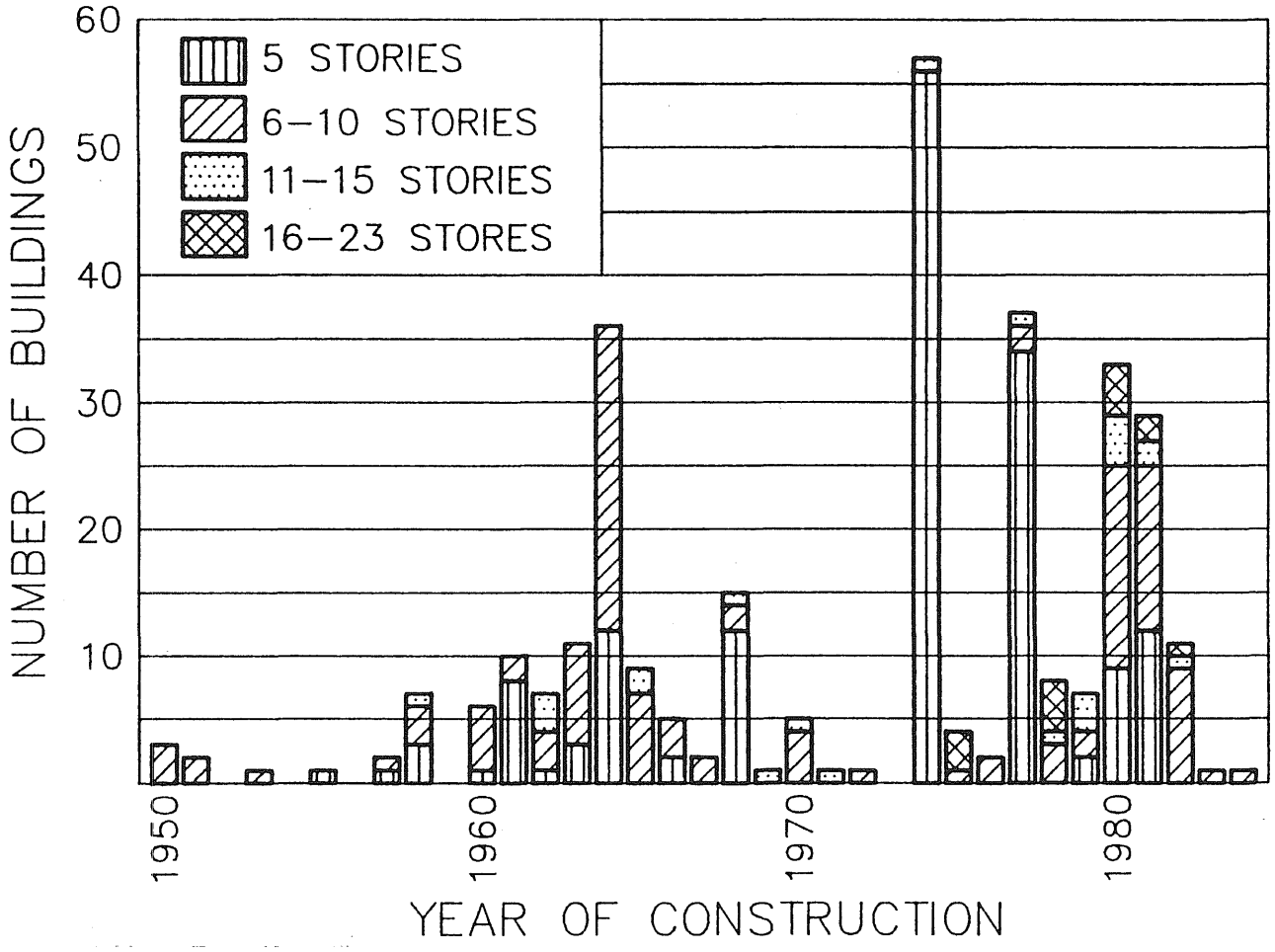


Fig. 3.8 Number and Height of Buildings Constructed between 1950 and 1984

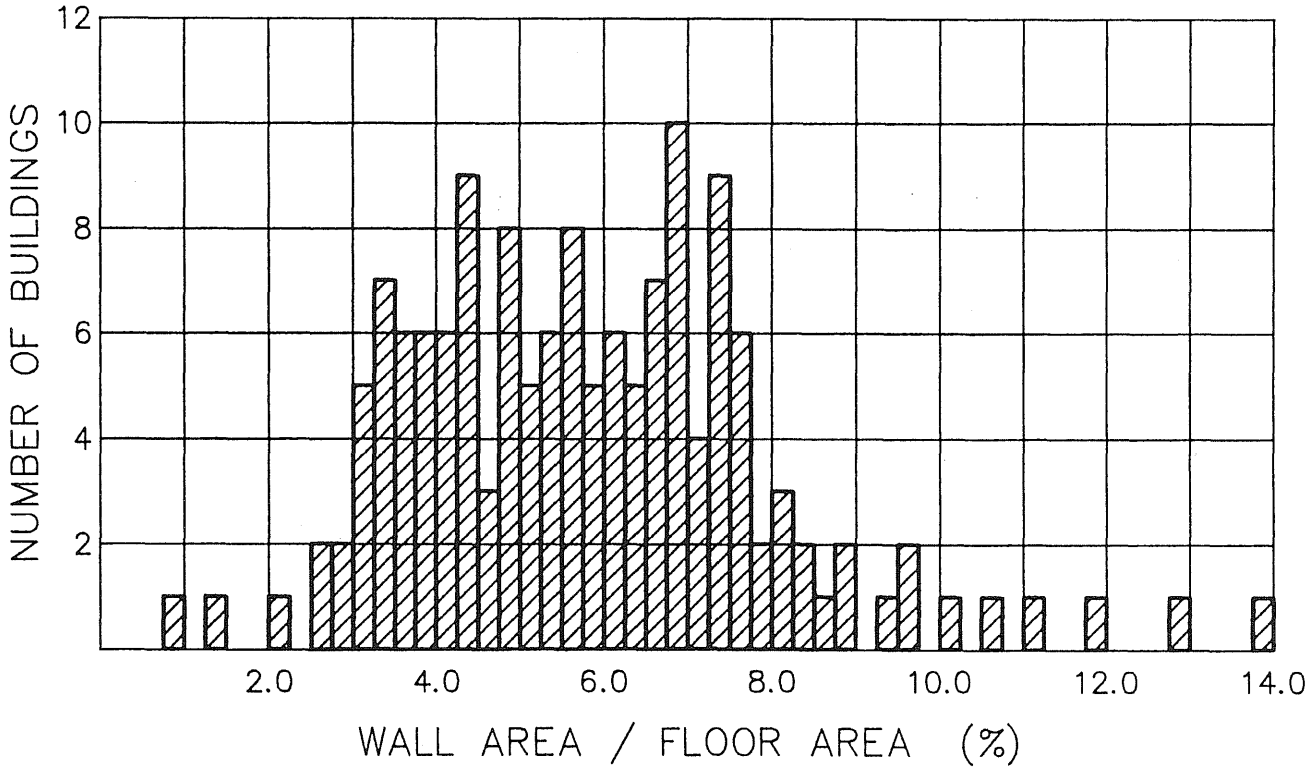


Fig. 3.9 Number of Buildings as a Function of the Ratio of Wall Area to Floor Area

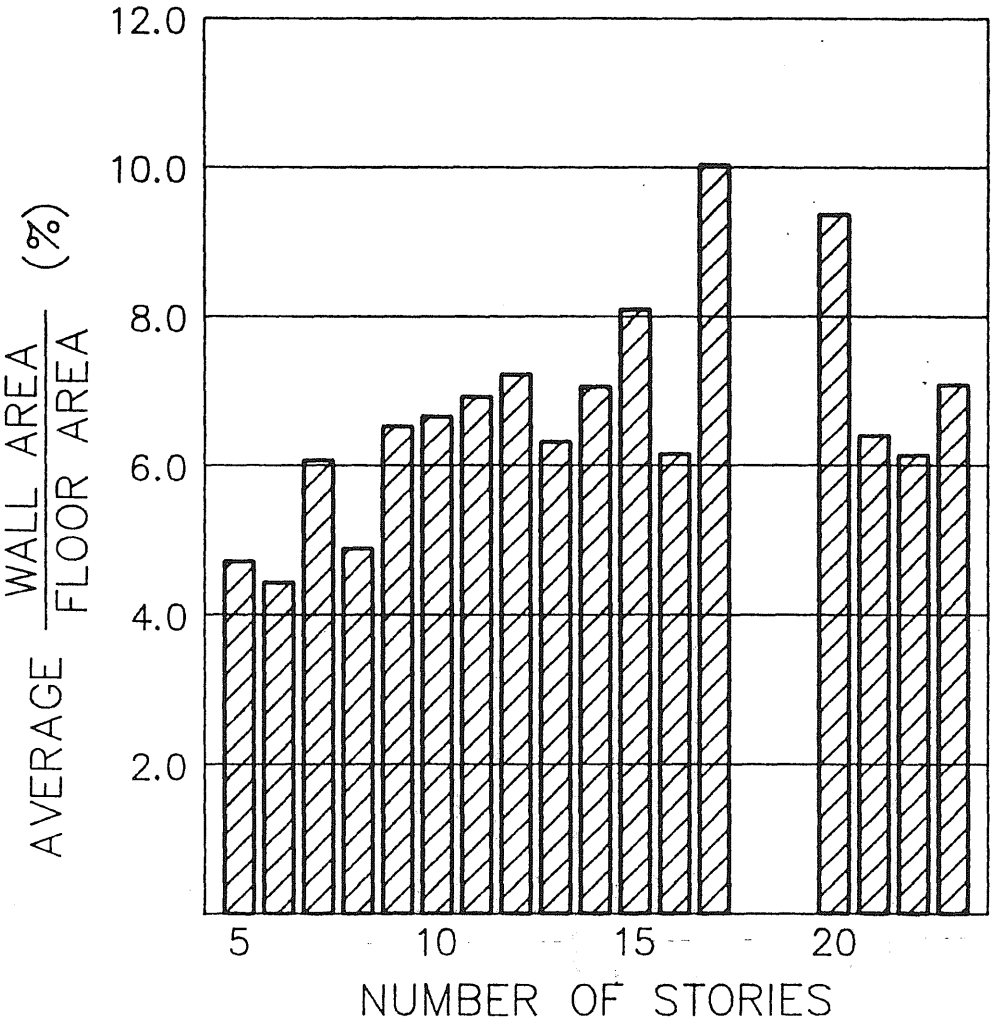


Fig. 3.10 Average Percent Wall Area as a Function of Height

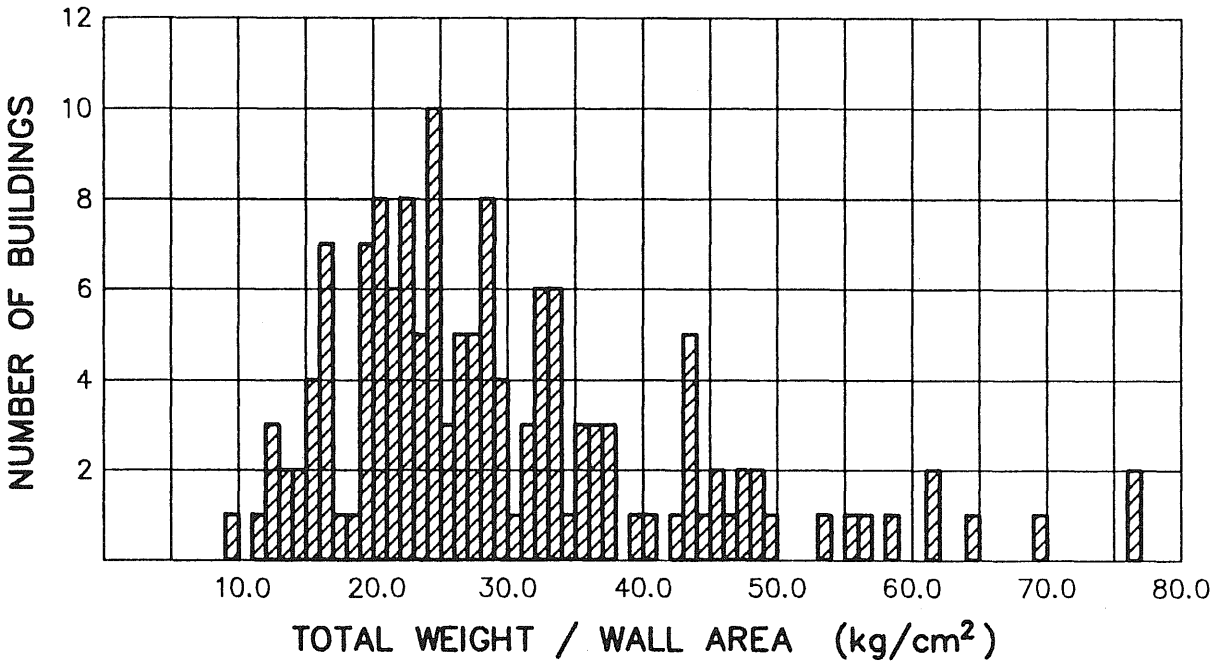


Fig. 3.11 Number of Buildings as a Function of the Ratio of Weight to Wall Area

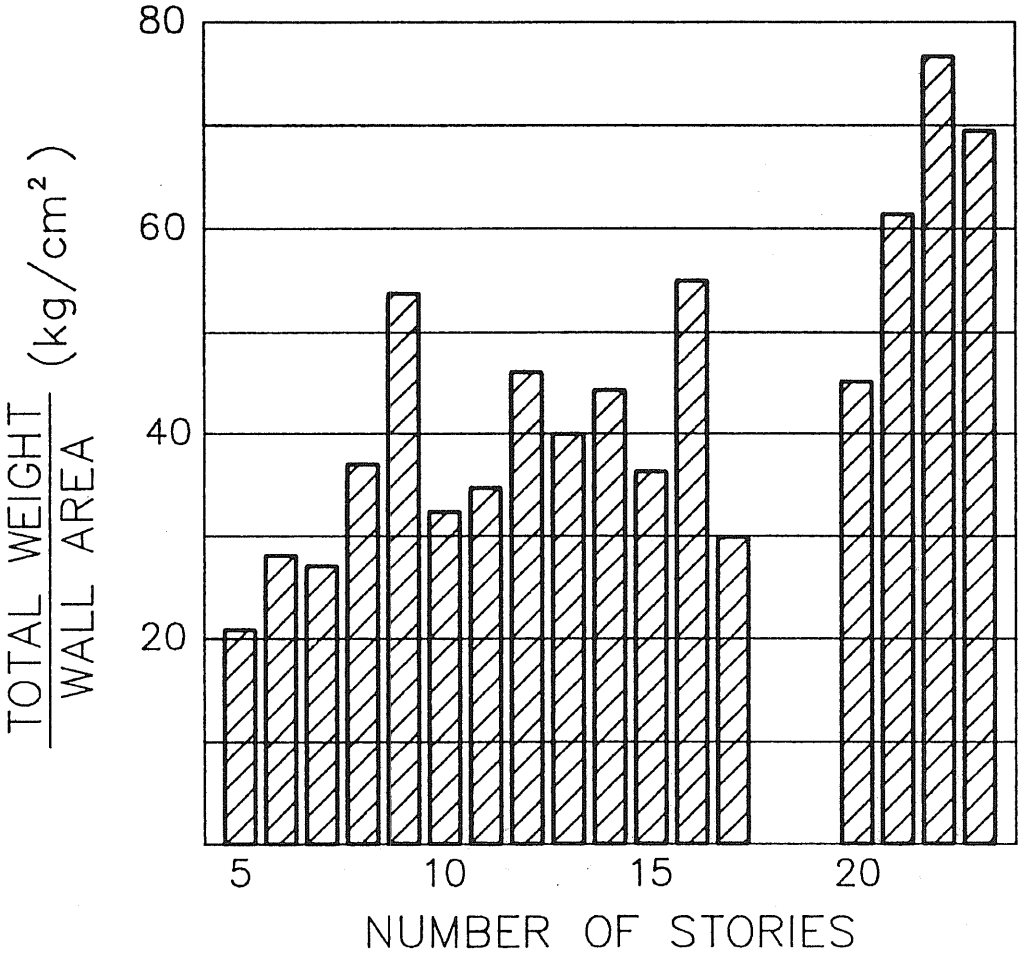


Fig. 3.12 Average Ratio of Weight to Wall Area as a Function of Height

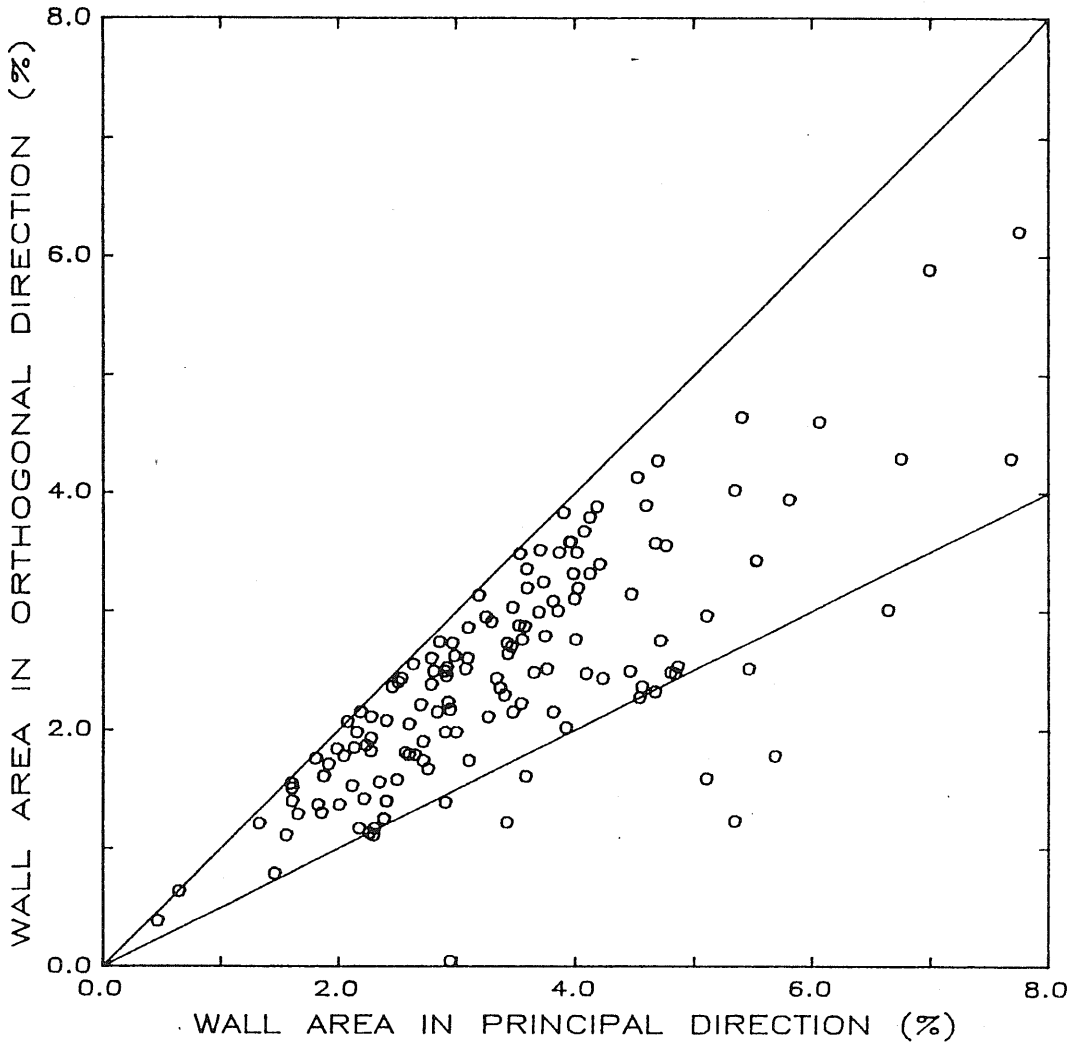


Fig. 3.13 Percent Wall Area in Orthogonal Directions

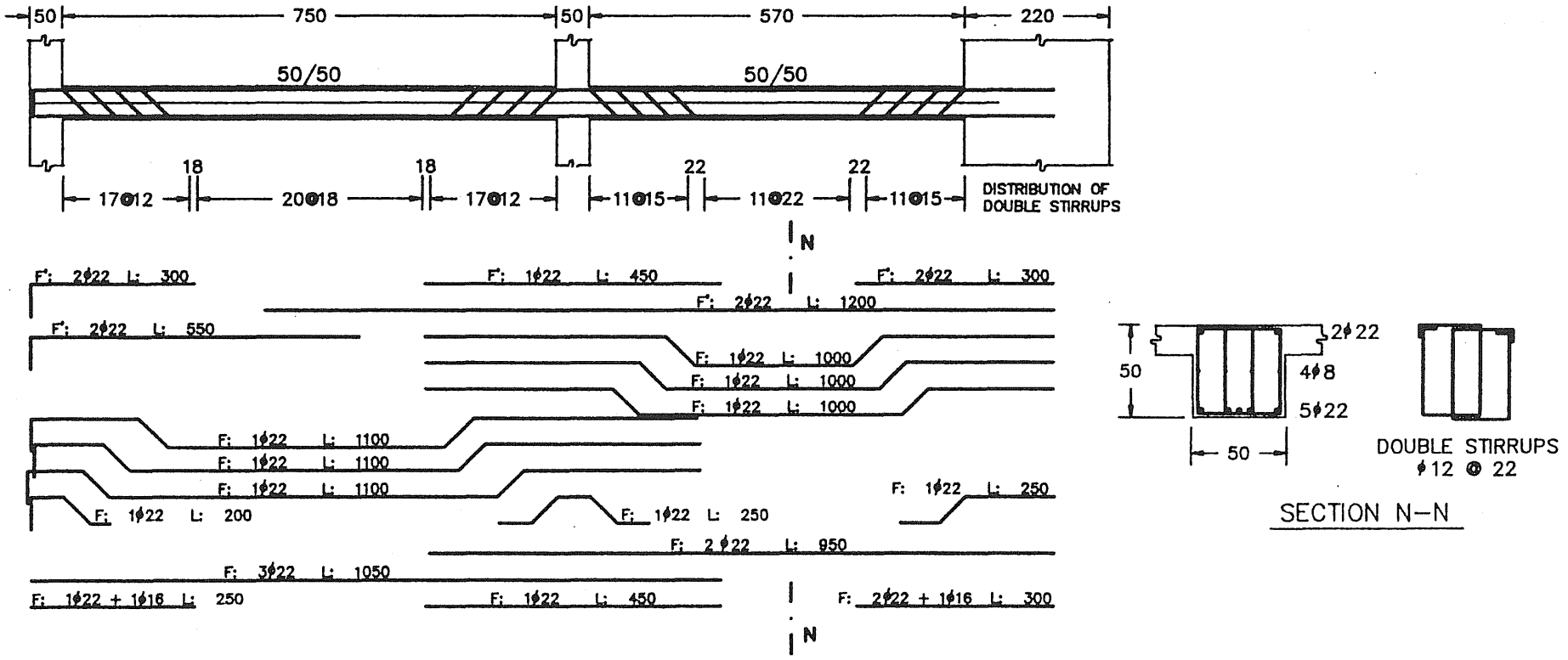


Fig. 4.1 Beam Detail from Torres del Sol

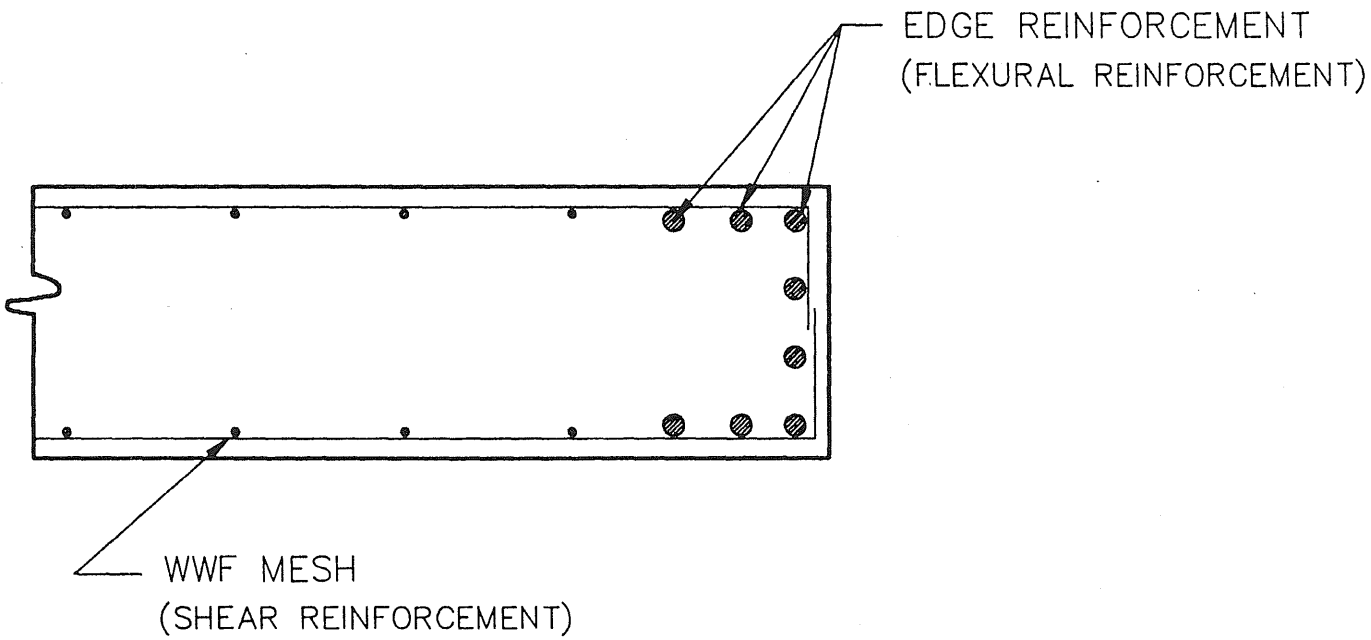


Fig. 4.2 Typical Reinforcement in Structural Wall

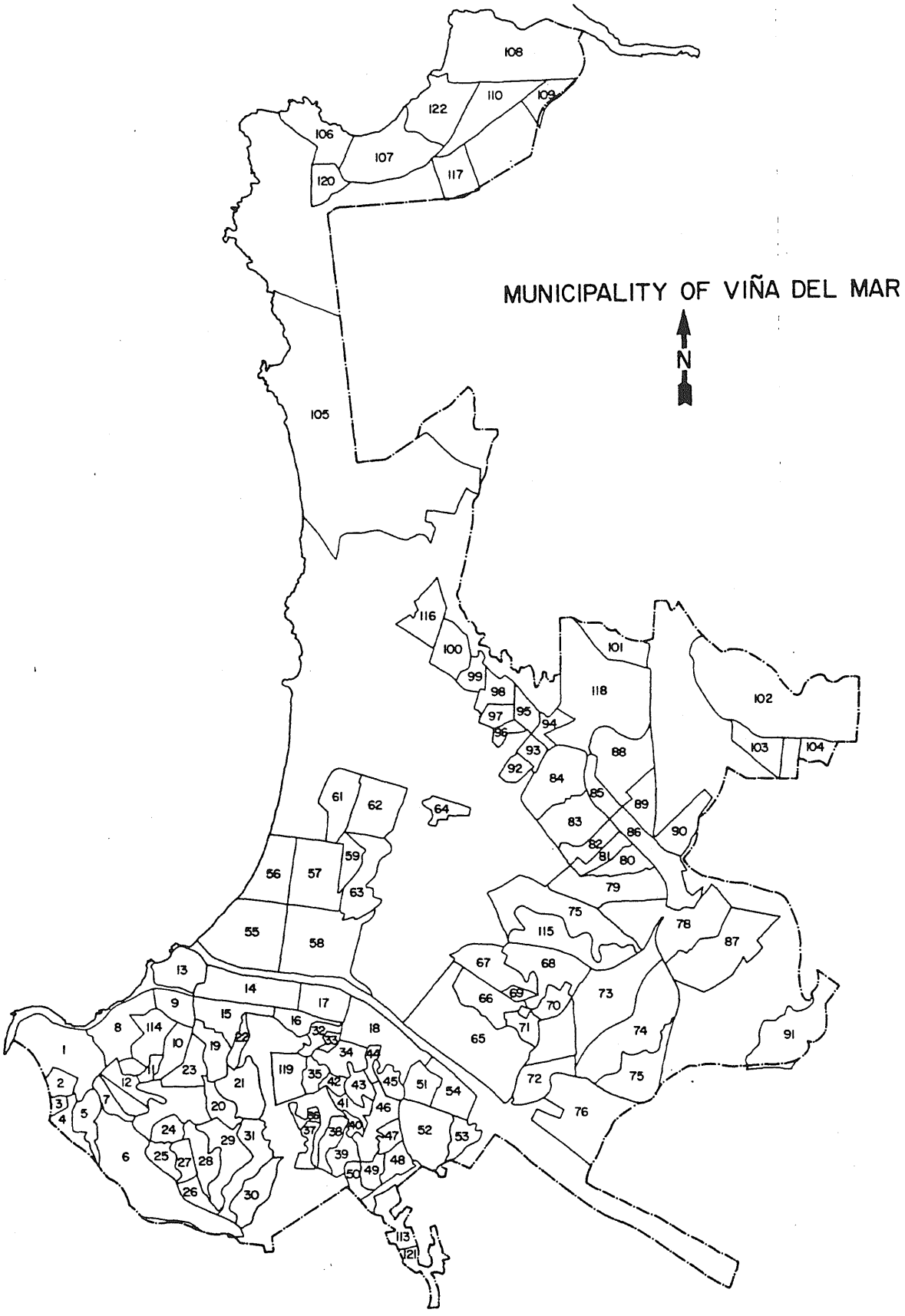


Fig. 5.1 Municipality of Viña del Mar
(a) Neighborhoods

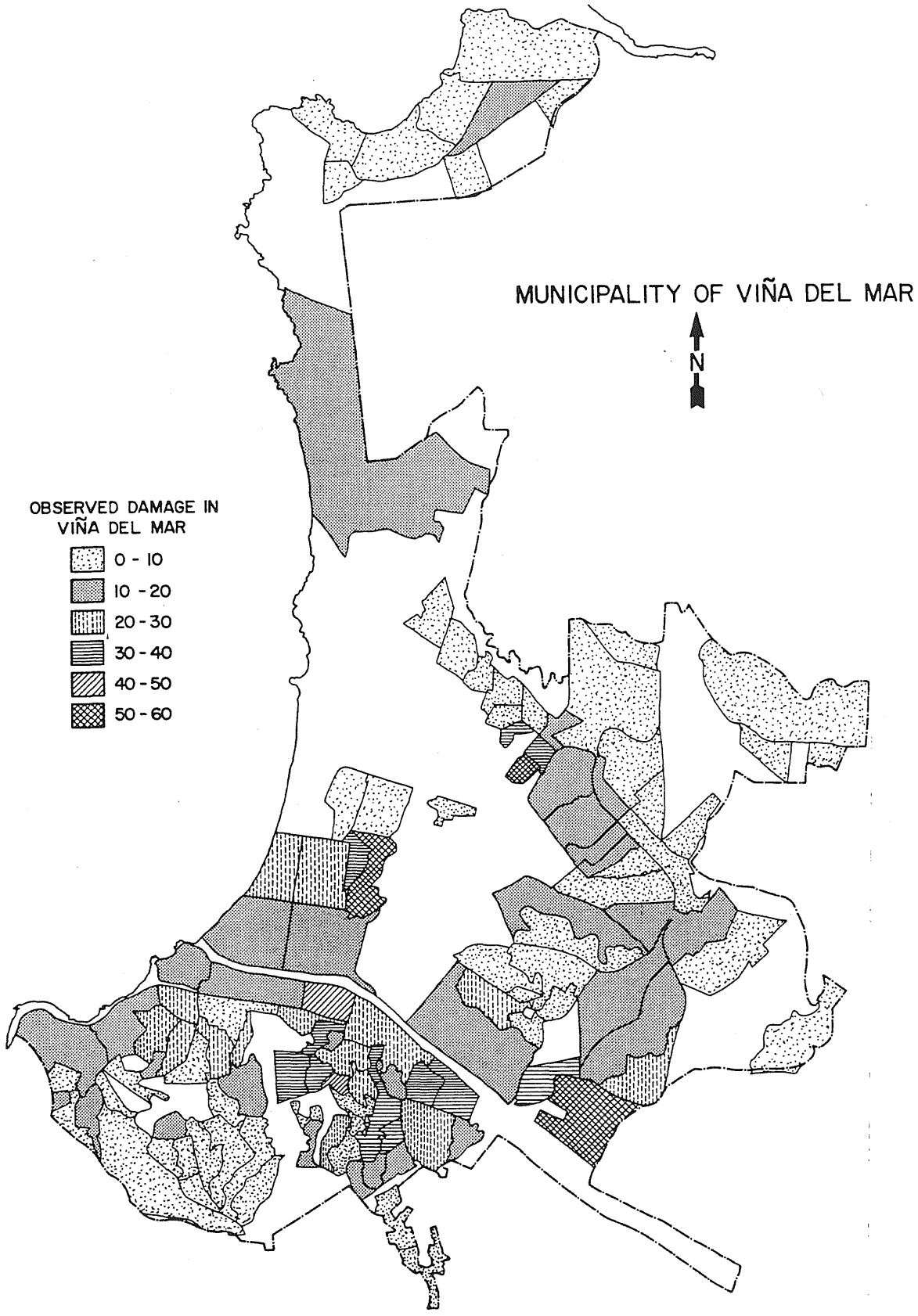


Fig. 5.1 Municipality of Viña del Mar
(b) Spatial Distribution of Damage

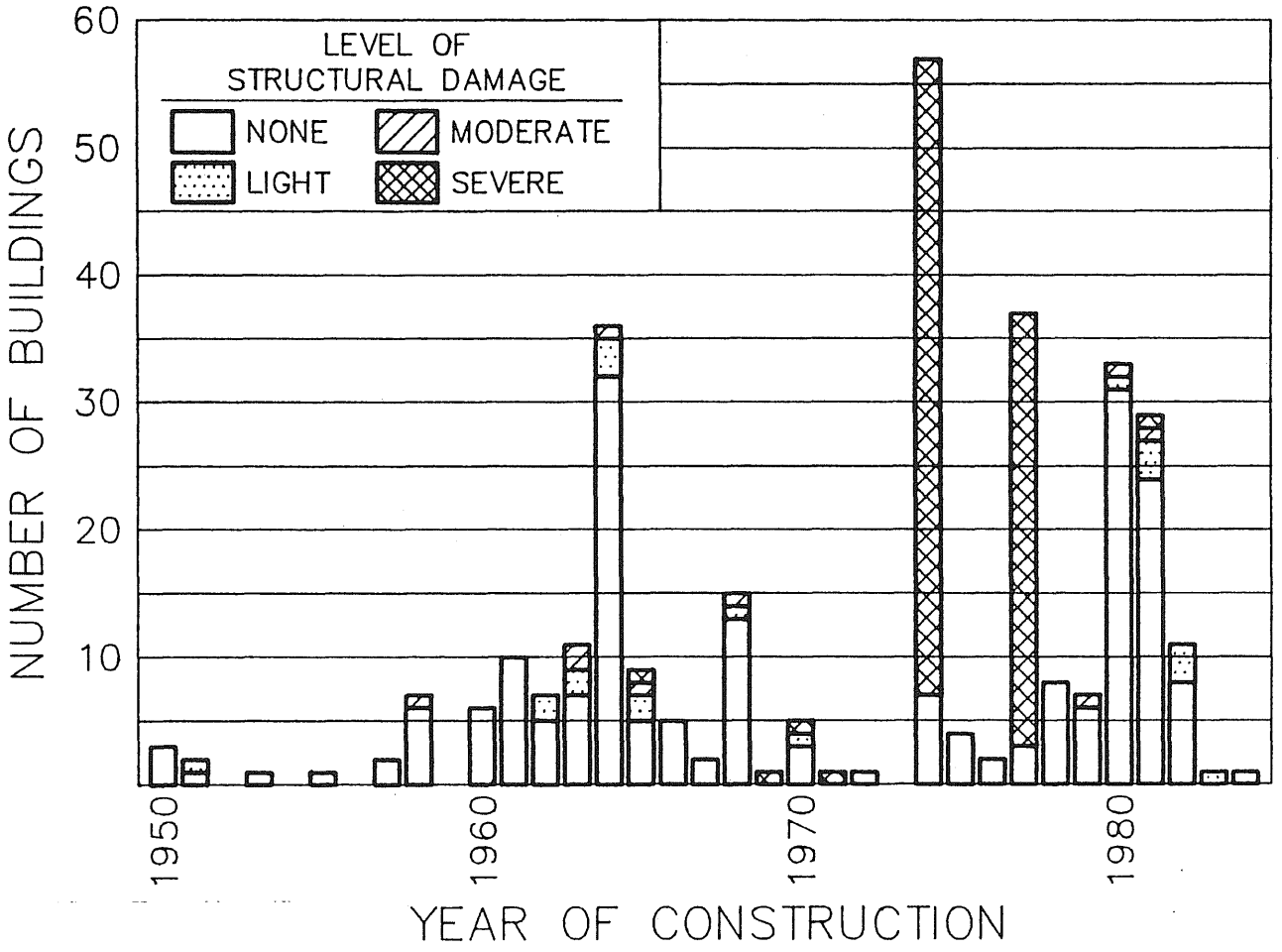


Fig. 5.2 Distribution of Structural Damage with Respect to Year of Construction

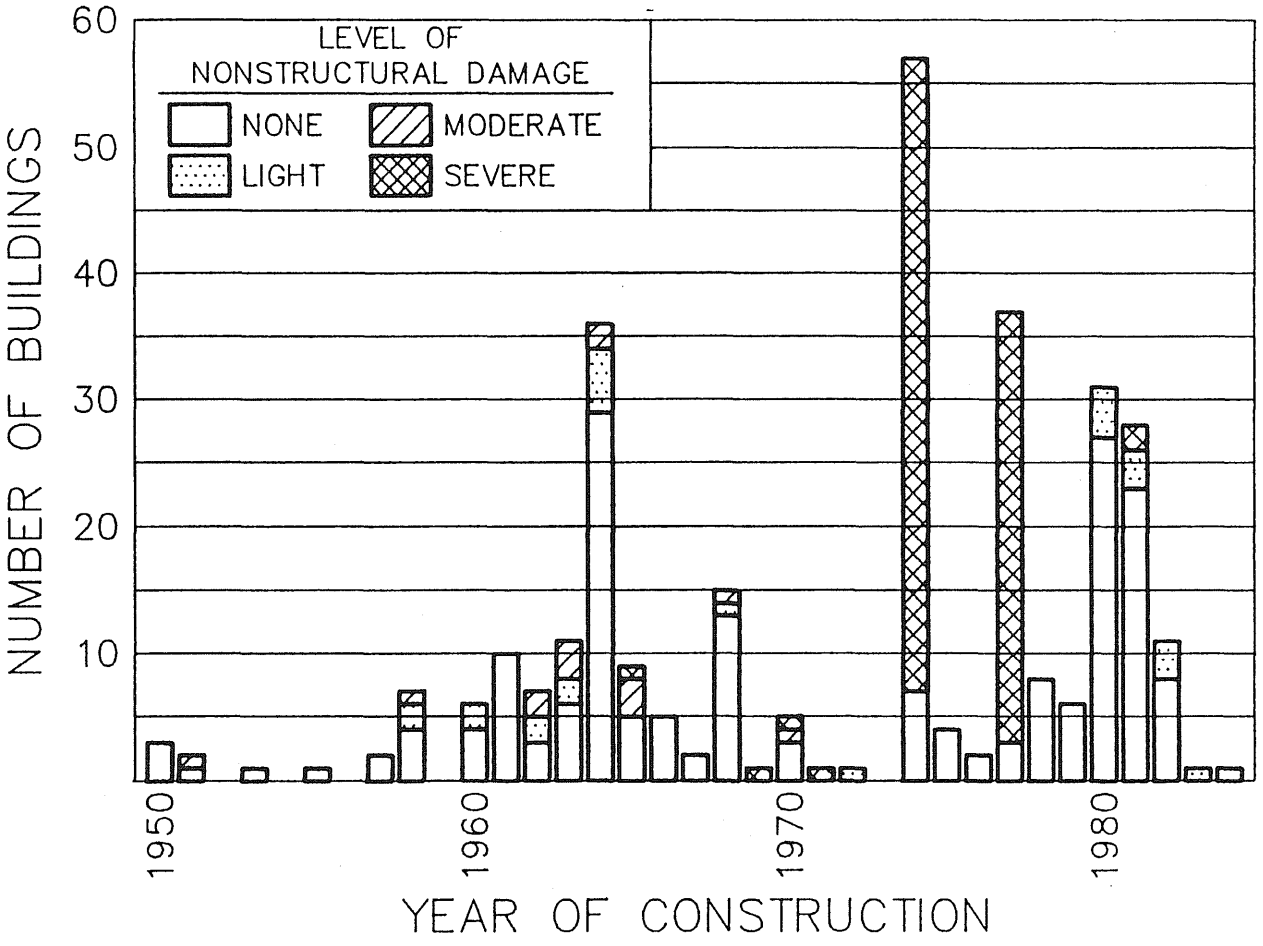


Fig. 5.3 Distribution of Nonstructural Damage with Respect to Year of Construction

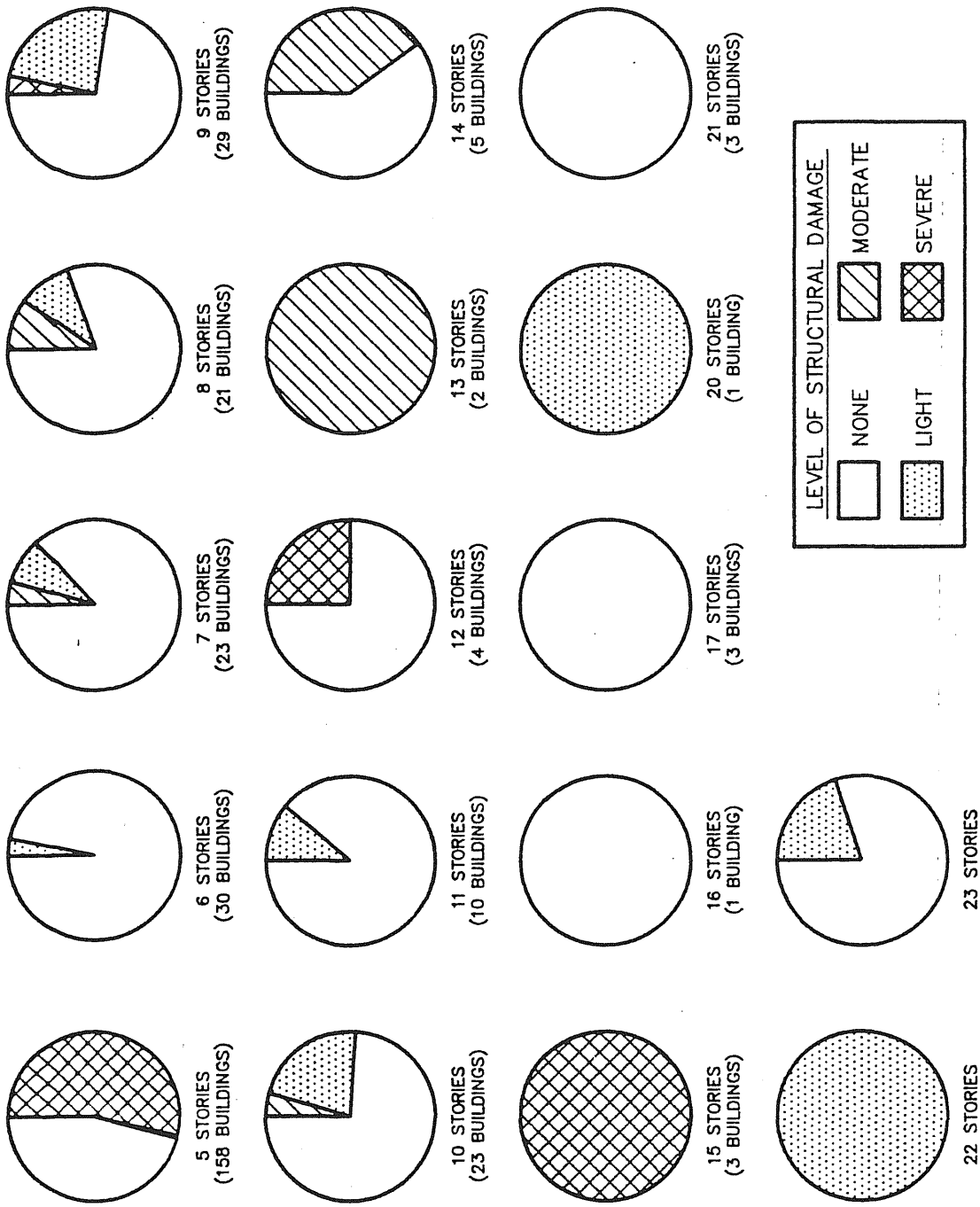


Fig. 5.4 Distribution of Structural Damage with Respect to Height

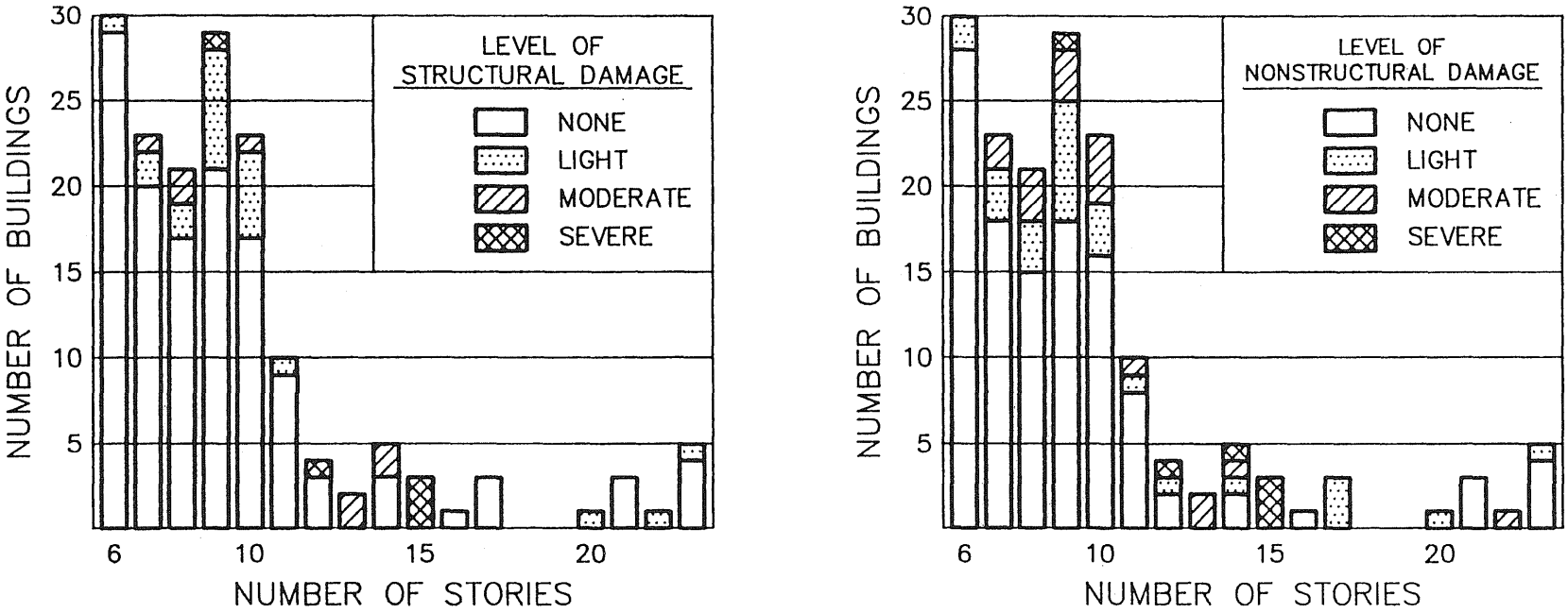


Fig. 5.5 Distribution of Damage in Buildings Having 6 to 23 Stories

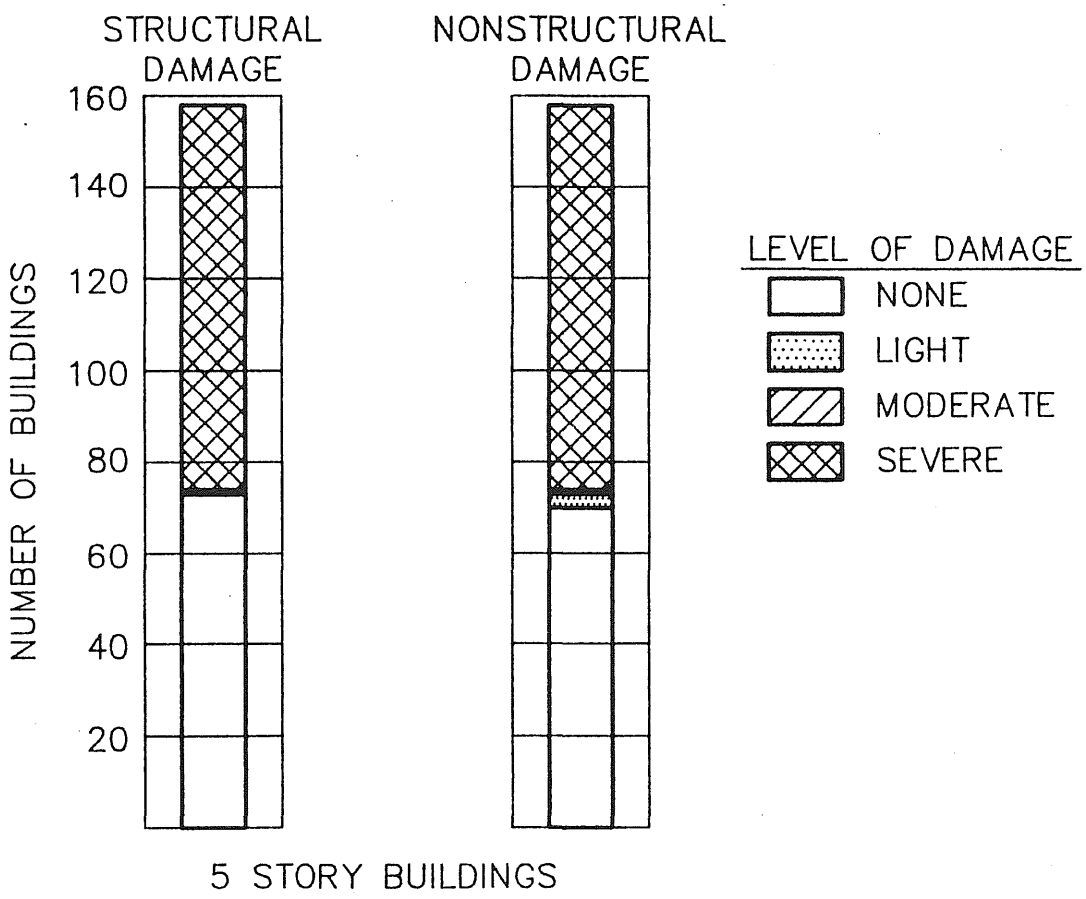


Fig. 5.6 Distribution of Damage in 5-Story Buildings

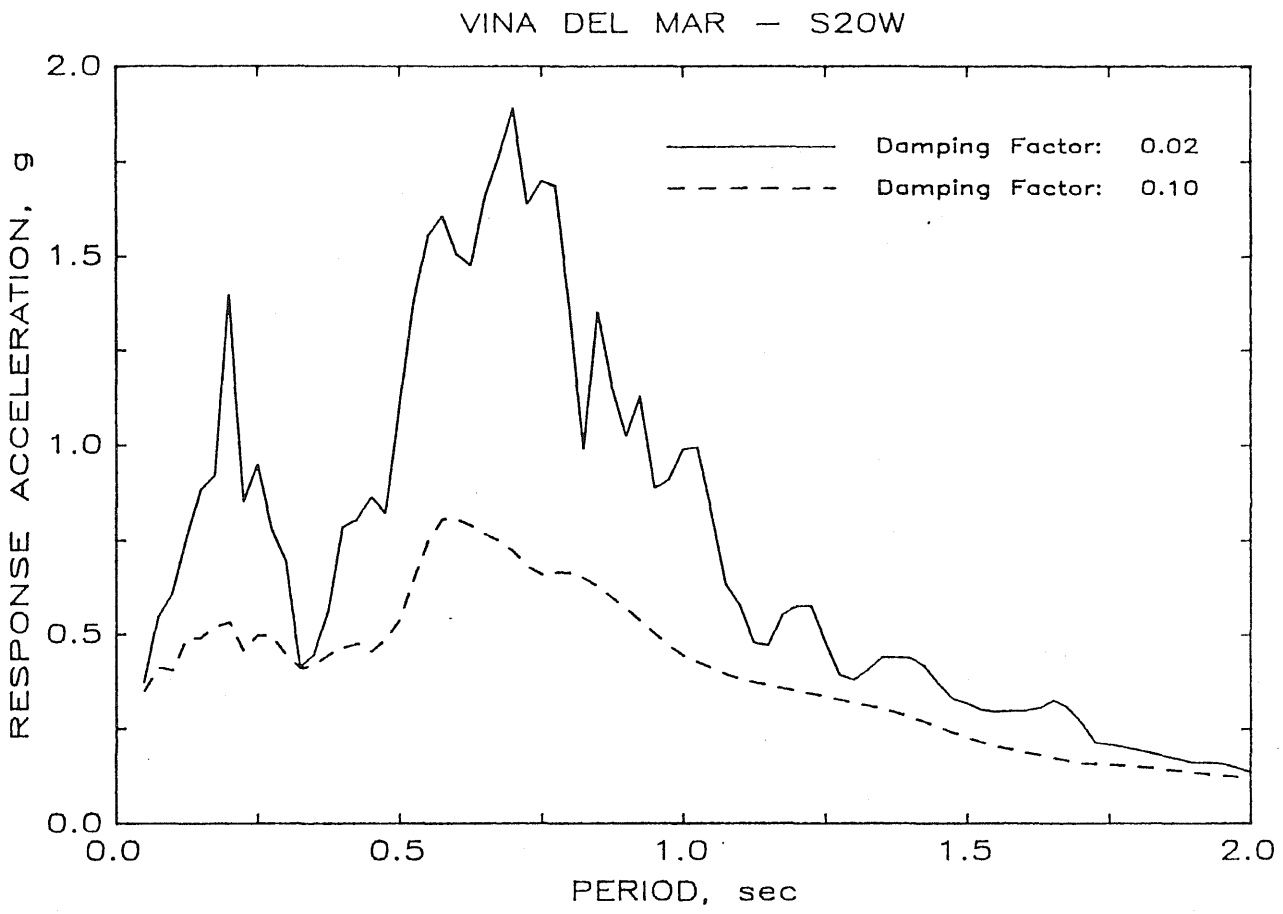


Fig. 5.7 Acceleration Response Spectra for Ground Motion Recorded in Viña del Mar

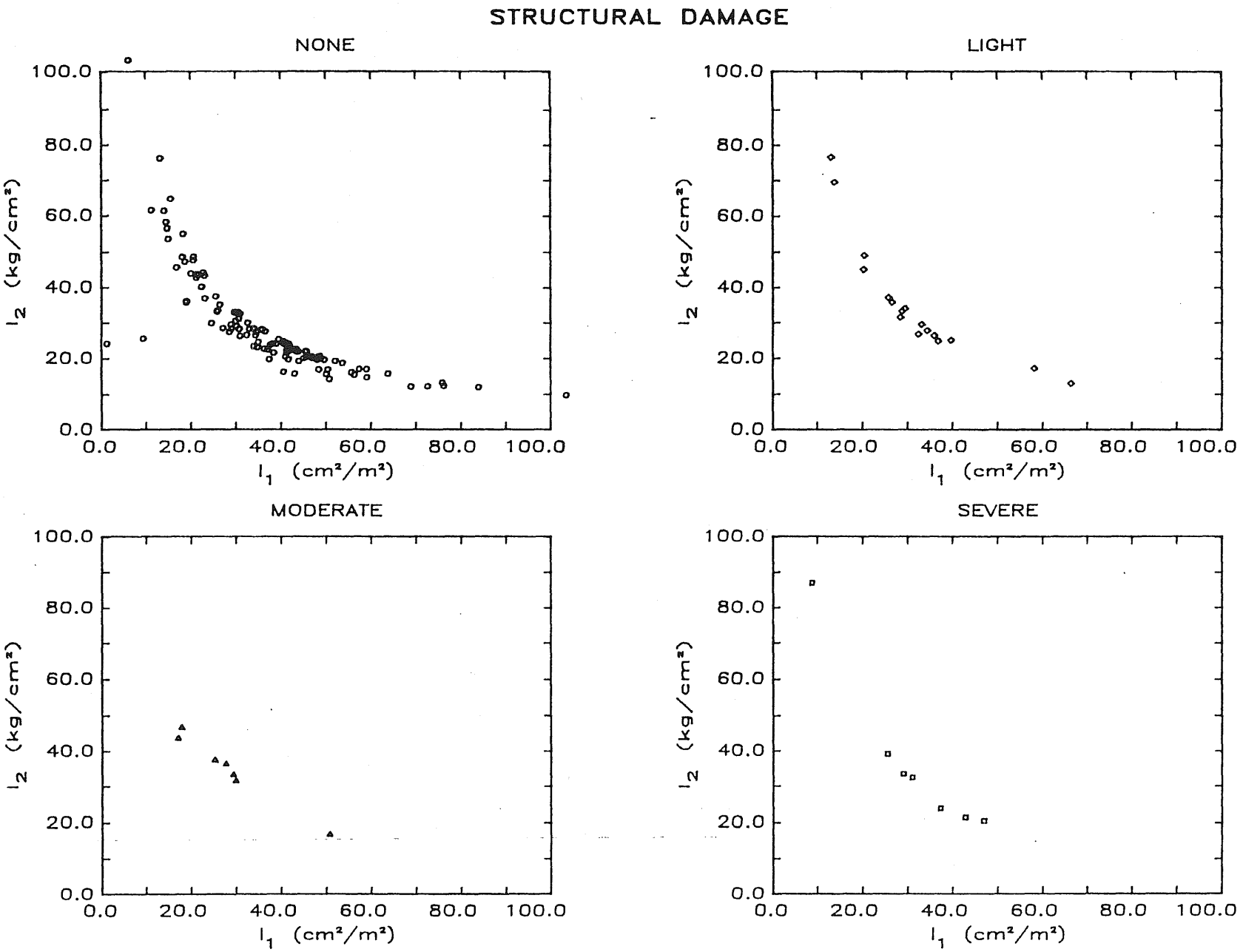


Fig. 5.8 Relationship between Structural Indices and Structural Damage

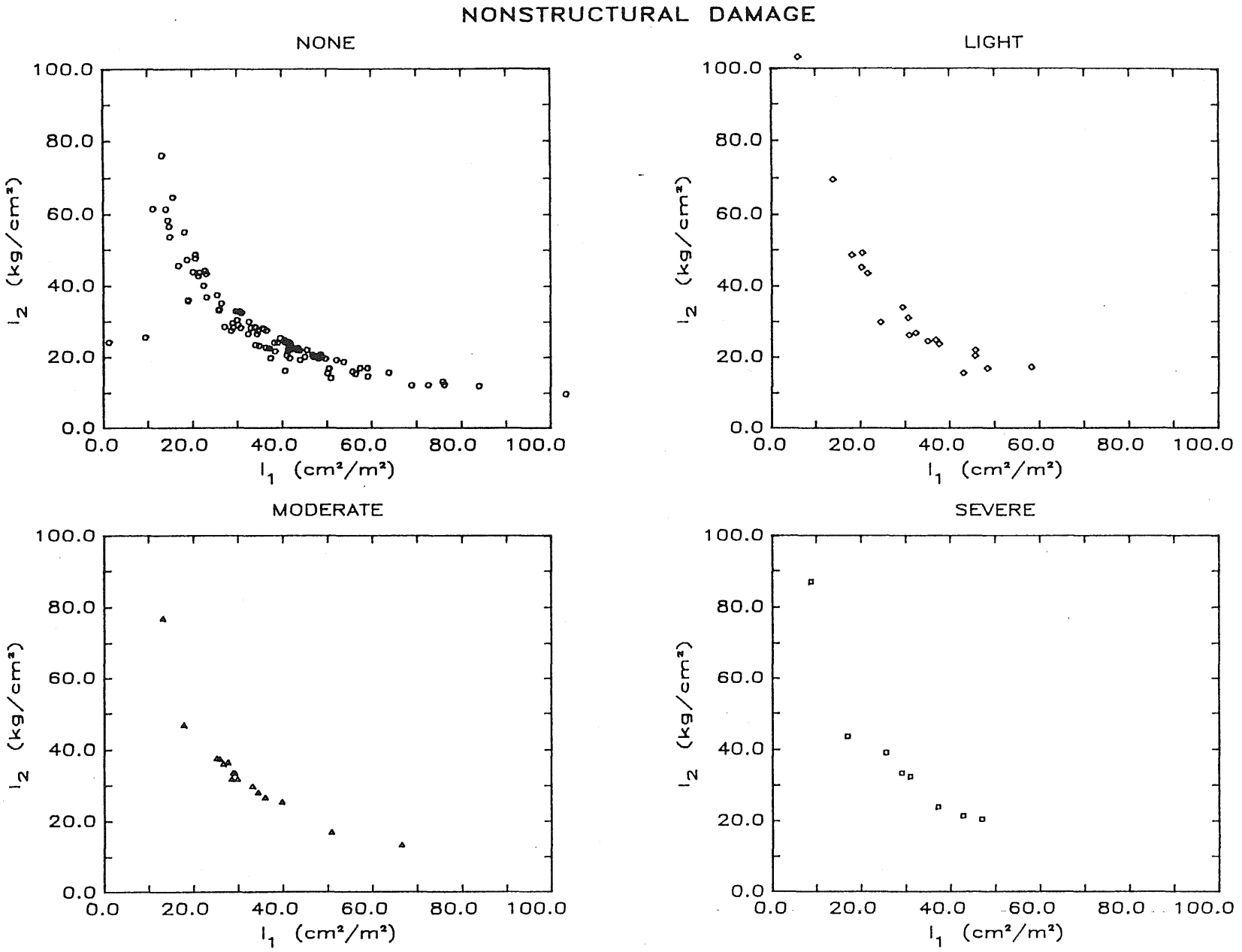


Fig. 5.9 Relationship between Structural Indices and Nonstructural Damage

APPENDIX A

BUILDING INVENTORY OF VIÑA DEL MAR

DATA SHEET NUMBER: 1

BUILDING: Plaza del Mar
ADDRESS : San Martin 787

NUMBER OF STORIES: 23 BASEMENTS: 2 HEIGHT: 68.4 m BUILDING AREA: 22,876 m^2

STRUCTURAL DESIGN: July 1980
WORK PERMIT : March 1981
FINAL RECEPTION : August 1983

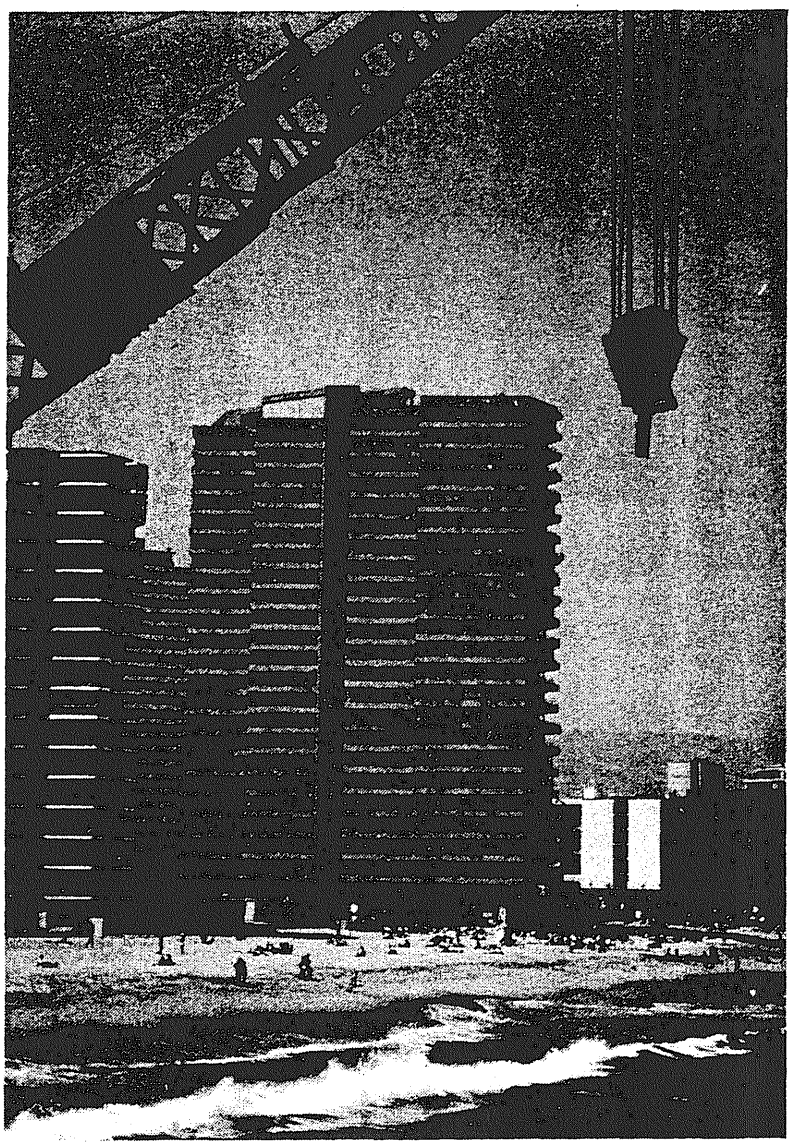
FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Mat foundation
PARTITIONS : Lightweight concrete, volcanita, or similar

CONCRETE: R_{28} = 300 kg/cm^2 STEEL : A63-42H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO ___ LIGHT X MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO ___ LIGHT X MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS:



DATA SHEET NUMBER: 2

BUILDING: Quinta Claude
ADDRESS : Alvarez 1926-2052

NUMBER OF STORIES: 23 BASEMENTS: 2 HEIGHT: 63.0 m BUILDING AREA: 12,126 m^2

STRUCTURAL DESIGN:
WORK PERMIT : November 1975
FINAL RECEPTION : September 1978

FRAMING SYSTEM :
TYPE OF FOUNDATION:
PARTITIONS : Triple volcanita and asbestos

CONCRETE: R_{28} = kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE :	NO	X	LIGHT	___	MODERATE	___	SEVERE ___
NONSTRUCTURAL DAMAGE:	NO	X	LIGHT	___	MODERATE	___	SEVERE ___
COST OF REPAIR :	$						

OBSERVATIONS: There are four identical buildings.

DATA SHEET NUMBER: 3

BUILDING: Torres del Sol
ADDRESS : 8 Norte 310-330

NUMBER OF STORIES: 22 BASEMENTS: 1 HEIGHT: 65.7 m BUILDING AREA: 11,946 m^2

STRUCTURAL DESIGN:
WORK PERMIT : November 1980
FINAL RECEPTION : July 1982

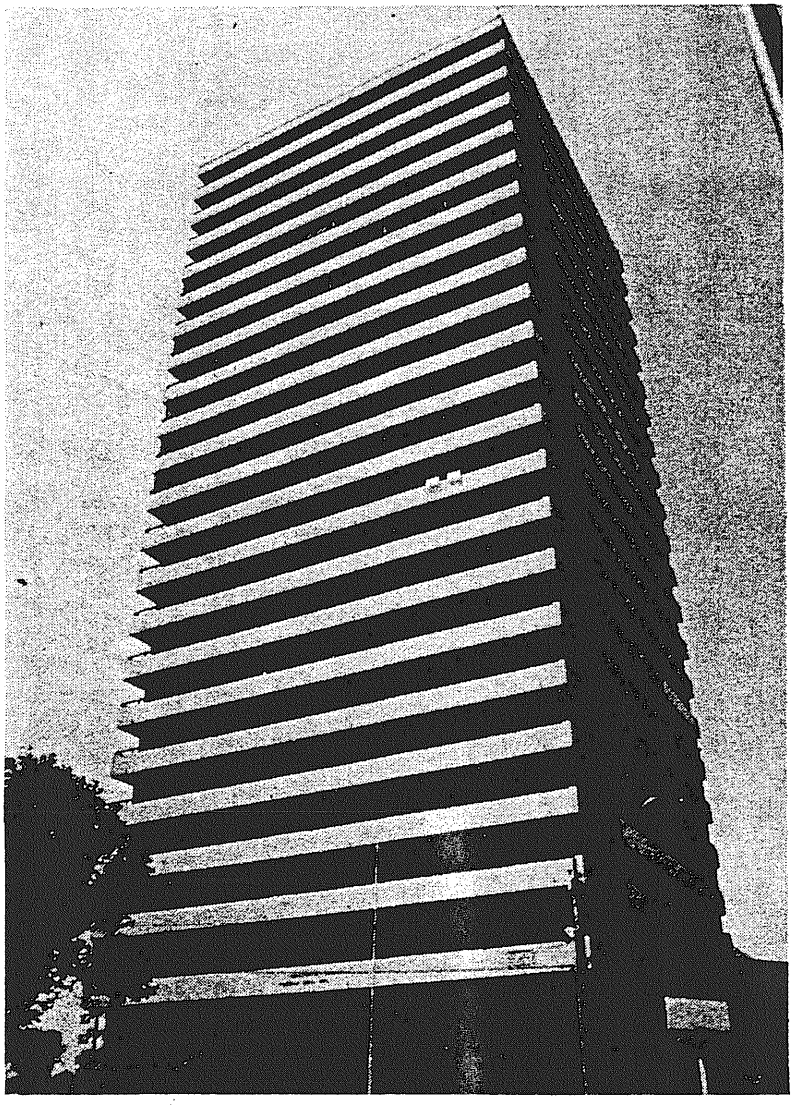
FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Continuous footings and foundation beams
PARTITIONS : Brick masonry (10 cm)

CONCRETE: R_{28} = 300 kg/cm^2 STEEL : A63-42H

ALLOWABLE SOIL PRESSURES STATIC: 2.5 kg/cm^2 DYNAMIC: 3.2 kg/cm^2

STRUCTURAL DAMAGE : NO ___ LIGHT X MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO ___ LIGHT ___ MODERATE X SEVERE ___
COST OF REPAIR : $

OBSERVATIONS: Commercial center. Dynamic analysis during design indicated a fundamental period of 1.51 sec



DATA SHEET NUMBER: 4

BUILDING: Portal Alamos
ADDRESS : Valparaiso 507

NUMBER OF STORIES: 21 BASEMENTS: 1 HEIGHT: 63 m BUILDING AREA: 10,864 m^2

STRUCTURAL DESIGN:
WORK PERMIT : May 1972
FINAL RECEPTION : June 1978

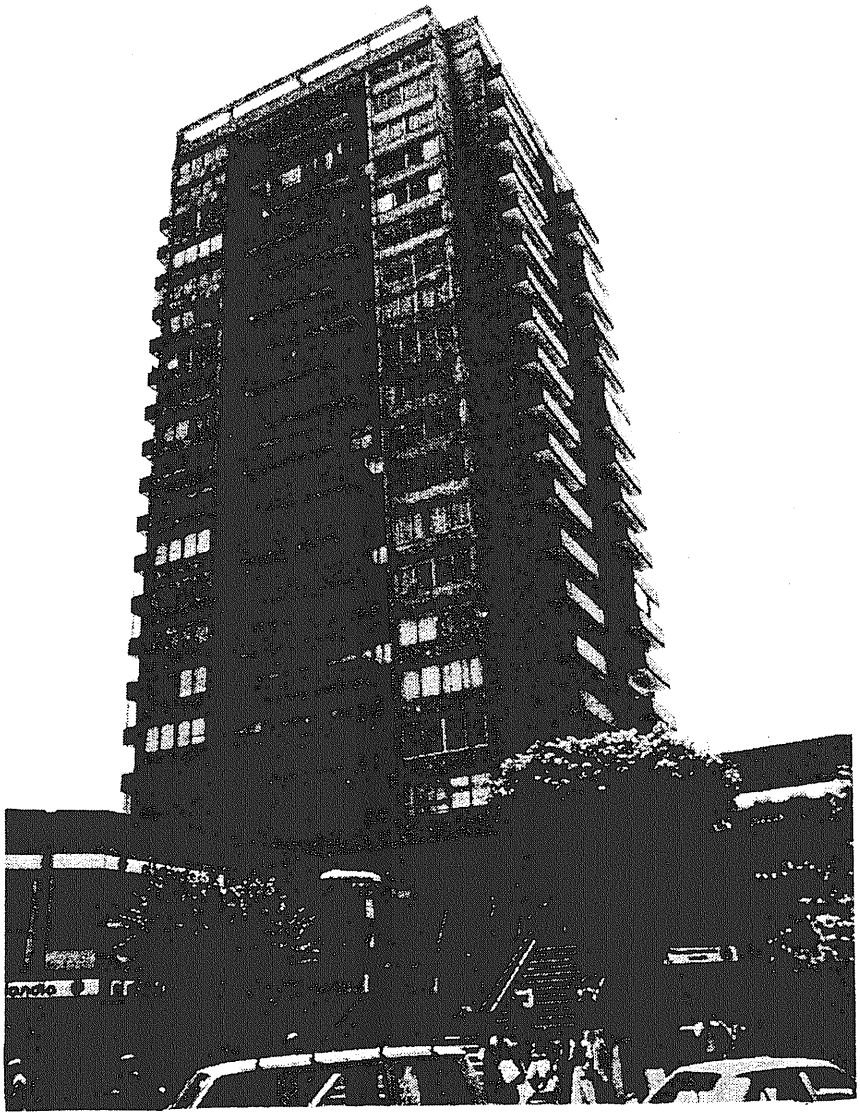
FRAMING SYSTEM :
TYPE OF FOUNDATION:
PARTITIONS : Brick pandereta

CONCRETE: R_{28} = 225 kg/cm^2 STEEL : A63-42H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE :	NO	X	LIGHT	___	MODERATE	___	SEVERE ___
NONSTRUCTURAL DAMAGE:	NO	X	LIGHT	___	MODERATE	___	SEVERE ___
COST OF REPAIR :	$						

OBSERVATIONS: Commercial center. Mechanical room above 21st floor



DATA SHEET NUMBER: 5

BUILDING: Torres de Miramar
ADDRESS : San Martin 1020-1080

NUMBER OF STORIES: 21 BASEMENTS: 2 HEIGHT: 56.7 m BUILDING AREA: 11,745 m^2

STRUCTURAL DESIGN: November 1973
WORK PERMIT : 1974
FINAL RECEPTION : 1975

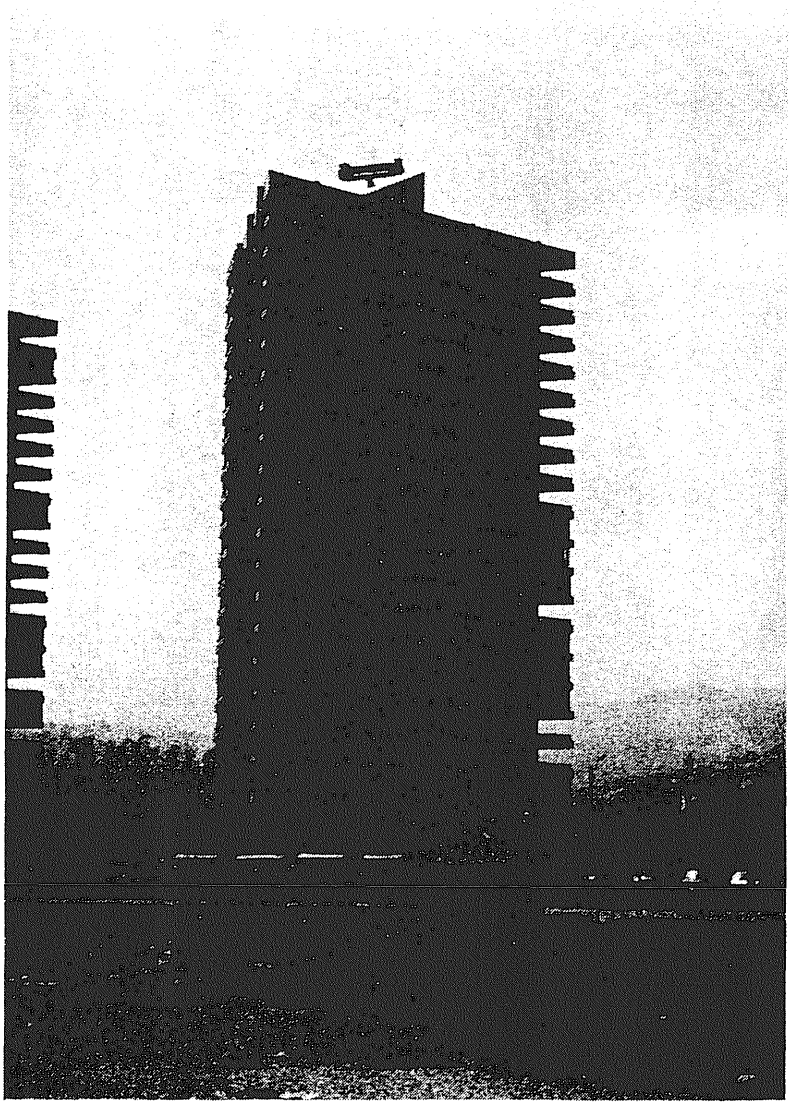
FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Continuous footing
PARTITIONS : Masonry, 10 cm thick (in kitchens and bathrooms), and double volcanita

CONCRETE: R_{28} = 300 kg/cm^2 STEEL : A63-42H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS: There are two identical buildings.



DATA SHEET NUMBER: 6

BUILDING: Marina Real
ADDRESS : Avenida San Martin 880

NUMBER OF STORIES: 20 BASEMENTS: 2 HEIGHT: 63.4 m BUILDING AREA: 9,653 m^2

STRUCTURAL DESIGN: November 1980
WORK PERMIT : January 1981
FINAL RECEPTION :

FRAMING SYSTEM : Frames and walls
TYPE OF FOUNDATION: Continuous footings and isolated footings tied by beams
PARTITIONS : Brick masonry

CONCRETE: R_{28} = 350 kg/cm^2 STEEL : A63-42H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO ___ LIGHT X MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO ___ LIGHT X MODERATE ___ SEVERE ___
COST OF REPAIR : $ 5,000,000

OBSERVATIONS: Dynamic analysis during design indicated a fundamental period of 1.31 sec

DATA SHEET NUMBER: 7

BUILDING: Torres del Pacifico
ADDRESS : San Martin (Between 12 and 14 Norte)

NUMBER OF STORIES: 17 BASEMENTS: 2 HEIGHT: 45 m BUILDING AREA: 9,449 m^2

STRUCTURAL DESIGN: October 1978
WORK PERMIT : April 1979
FINAL RECEPTION : December 1980

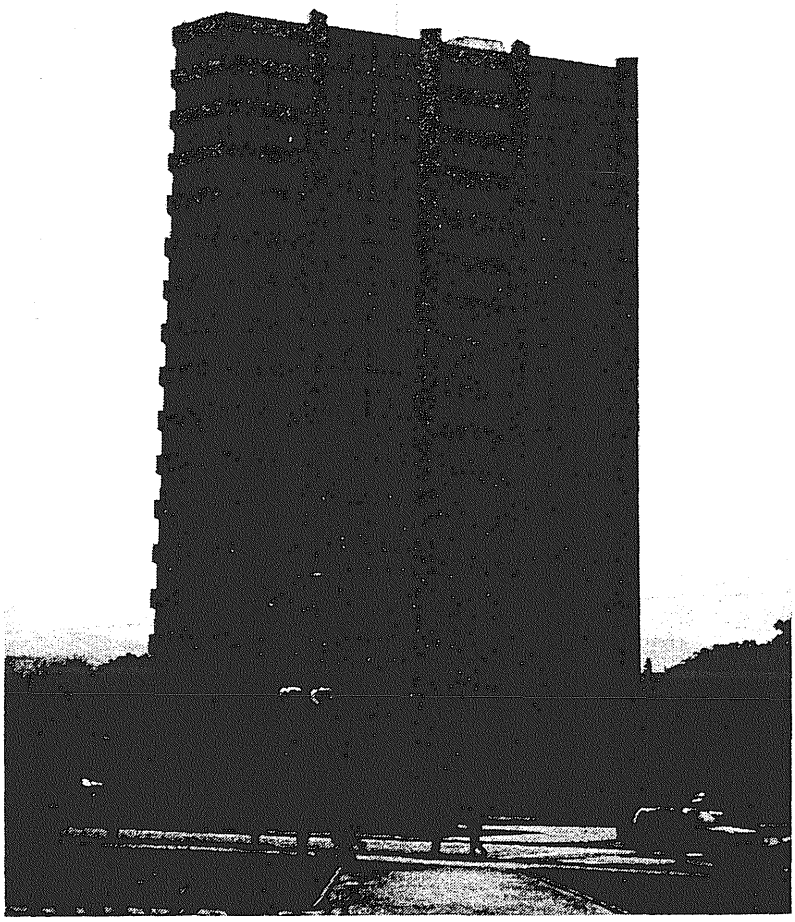
FRAMING SYSTEM : Structural wall, beams, and columns
TYPE OF FOUNDATION: Slab and beam foundation
PARTITIONS : Double volcanita, and brick pandereta

CONCRETE: R_{28} = 300 kg/cm^2 STEEL : A63-42H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO ___ LIGHT X MODERATE ___ SEVERE ___
COST OF REPAIR : $ 1,000,000

OBSERVATIONS: There are three identical buildings.



DATA SHEET NUMBER: 8

BUILDING: Mar del Sur
ADDRESS : Alvarez 58

NUMBER OF STORIES: 16 BASEMENTS: 2 HEIGHT: 42.7 m BUILDING AREA: 8,011 m^2

STRUCTURAL DESIGN: May 1979
WORK PERMIT : June 1979
FINAL RECEPTION : May 1980

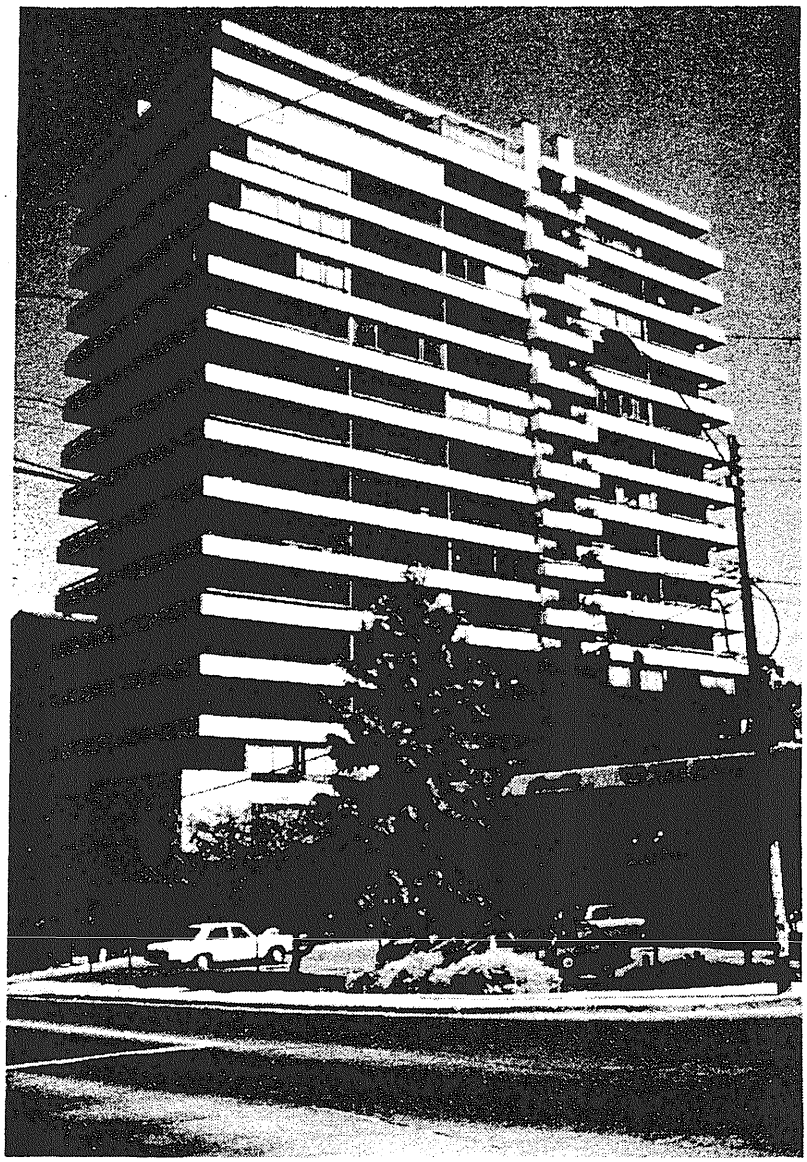
FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Continuous footings and cellular mat
PARTITIONS : Volcanita or bepolita

CONCRETE: R_{28} = 300 kg/cm^2 STEEL : A44-28H

ALLOWABLE SOIL PRESSURES STATIC: 2.44 kg/cm^2 DYNAMIC: 4.36 kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS:



DATA SHEET NUMBER: 9

BUILDING: Acapulco
ADDRESS : San Martin 821

NUMBER OF STORIES: 15 BASEMENTS: 1 HEIGHT: 41.3 m BUILDING AREA: 9,789 m^2

STRUCTURAL DESIGN: November 1961
WORK PERMIT :
FINAL RECEPTION : December 1967

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Mat foundation
PARTITIONS : Pandereta (masonry)

CONCRETE: R_{28} = 225 kg/cm^2 STEEL : Twisted

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO ___ LIGHT ___ MODERATE ___ SEVERE X
NONSTRUCTURAL DAMAGE: NO ___ LIGHT ___ MODERATE ___ SEVERE X
COST OF REPAIR : $ 180,000,000

OBSERVATIONS: Water tank on the roof.

DATA SHEET NUMBER: 10

BUILDING: Tahiti
ADDRESS : San Martin 972

NUMBER OF STORIES: 15 BASEMENTS: 1 HEIGHT: 41.3 m BUILDING AREA: 6.695 m^2

STRUCTURAL DESIGN:
WORK PERMIT : November 1968
FINAL RECEPTION : August 1973

FRAMING SYSTEM : Coupled walls
TYPE OF FOUNDATION: Slab and walls
PARTITIONS : Lightweight clay brick

CONCRETE: R_{28} = 300 kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE :	NO ___	LIGHT ___	MODERATE X	SEVERE X
NONSTRUCTURAL DAMAGE:	NO ___	LIGHT ___	MODERATE X	SEVERE X

COST OF REPAIR : $ 2,825,000

OBSERVATIONS: Water tank above 15th story.

DATA SHEET NUMBER: 11

BUILDING: Hanga-Roa
ADDRESS : San Martin 925

NUMBER OF STORIES: 15 BASEMENTS: 1 HEIGHT: 41.2 m BUILDING AREA: 16,550 m^2

STRUCTURAL DESIGN: November 1968
WORK PERMIT :
FINAL RECEPTION : June 1971

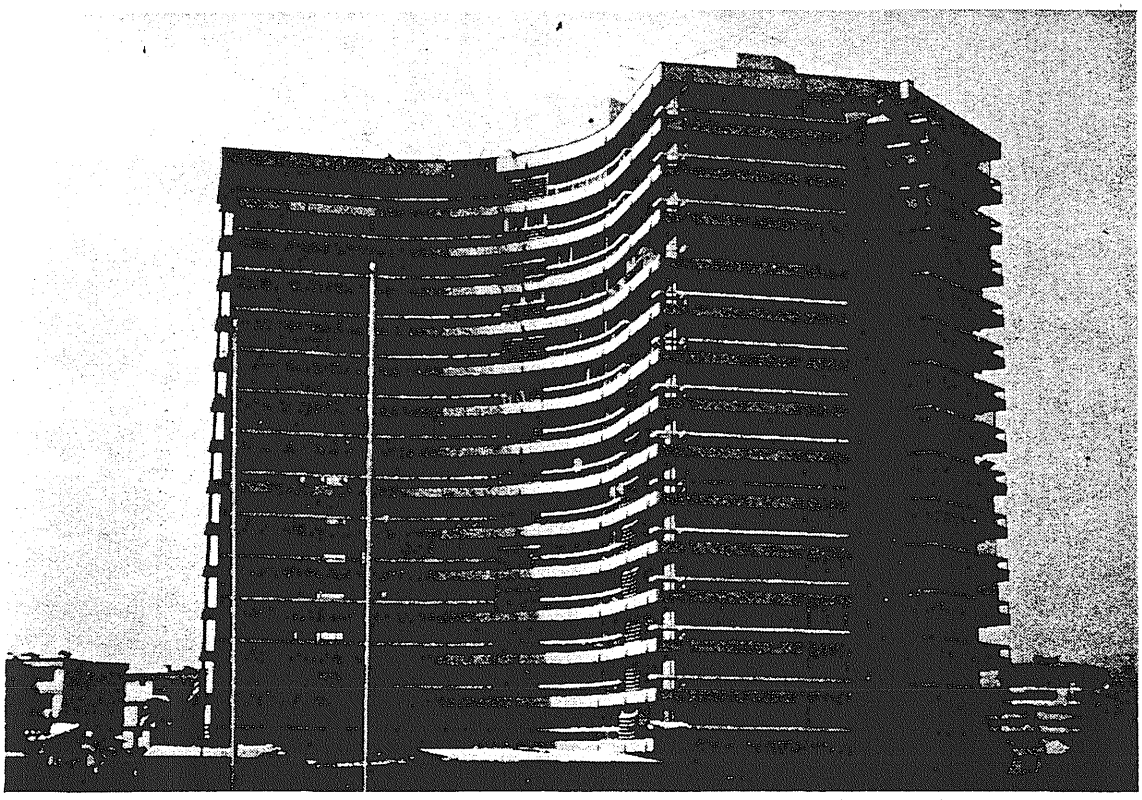
FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Cellular mat
PARTITIONS : Brick masonry

CONCRETE: R_{28} = kg/cm^2 STEEL : A63-42H

ALLOWABLE SOIL PRESSURES STATIC: 3.0 kg/cm^2 DYNAMIC: 4.0 kg/cm^2

STRUCTURAL DAMAGE : NO ___ LIGHT ___ MODERATE ___ SEVERE X
NONSTRUCTURAL DAMAGE: NO ___ LIGHT ___ MODERATE ___ SEVERE X
COST OF REPAIR : $ 225,000,000

OBSERVATIONS:



DATA SHEET NUMBER: 12

BUILDING: Don Jose
ADDRESS : 2 Norte 640

NUMBER OF STORIES: 14 BASEMENTS: 1 HEIGHT: 40.0 m BUILDING AREA: 5,972 m^2

STRUCTURAL DESIGN: April 1981
WORK PERMIT :
FINAL RECEPTION :

FRAMING SYSTEM : Structural walls and frames
TYPE OF FOUNDATION: Mat foundation
PARTITIONS : Masonry and gypsum pandereta

CONCRETE: R_{28} = 300 kg/cm^2 STEEL : A63-42H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE :	NO ___	LIGHT X	MODERATE X	SEVERE ___
NONSTRUCTURAL DAMAGE:	NO ___	LIGHT ___	MODERATE ___	SEVERE X
COST OF REPAIR :	$ 10,000,000			

OBSERVATIONS:

DATA SHEET NUMBER: 13

BUILDING: Festival
ADDRESS : 9 Norte 450

NUMBER OF STORIES: 14 BASEMENTS: 1 HEIGHT: 38.2 m BUILDING AREA: 14,698 m^2

STRUCTURAL DESIGN: March 1978
WORK PERMIT :
FINAL RECEPTION : 1979

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Mat foundation
PARTITIONS : Brick masonry

CONCRETE: R_{28} = 300 kg/cm^2 STEEL : A63-42H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO ___ LIGHT ___ MODERATE X SEVERE ___
NONSTRUCTURAL DAMAGE: NO ___ LIGHT ___ MODERATE X SEVERE ___
COST OF REPAIR : $ 41,390,000

OBSERVATIONS:

DATA SHEET NUMBER: 14

BUILDING: Puesta de Sol
ADDRESS : Calle Ecuador 23

NUMBER OF STORIES: 14 BASEMENTS: 1 HEIGHT: 37.5 m BUILDING AREA: 4,402 m^2

STRUCTURAL DESIGN: May 1979
WORK PERMIT : 1980
FINAL RECEPTION : February 1981

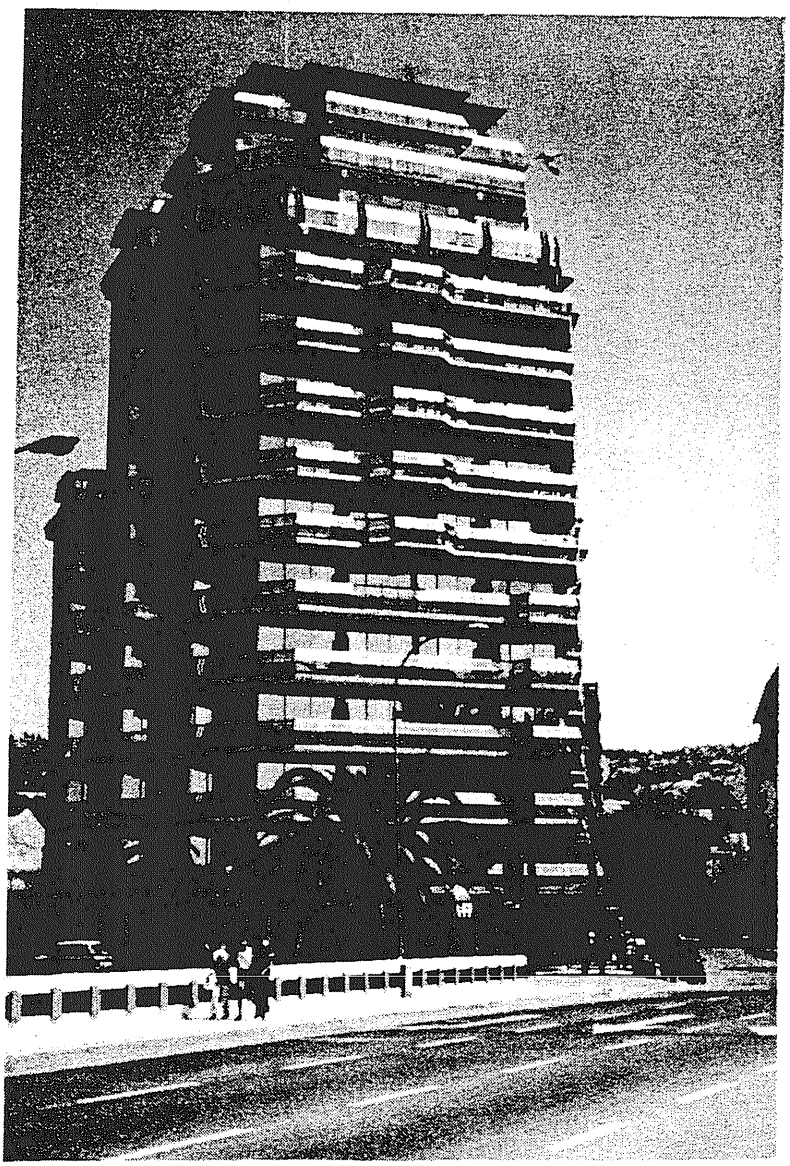
FRAMING SYSTEM : Primarily structural walls
TYPE OF FOUNDATION: Mat with foundation beams
PARTITIONS : Brick masonry

CONCRETE: R_{28} = 300 kg/cm^2 STEEL : A63-42

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS: Plan is reduced with height.



DATA SHEET NUMBER: 15

BUILDING: O'Higgins
ADDRESS : Arlegui 734

NUMBER OF STORIES: 14 BASEMENTS: 1 HEIGHT: 37 m BUILDING AREA: 5,274 m^2

STRUCTURAL DESIGN:
WORK PERMIT : December 1962
FINAL RECEPTION :

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION:
PARTITIONS : Hollow brick masonry

CONCRETE: R_{28} = kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE :	NO X	LIGHT ___	MODERATE ___	SEVERE ___
NONSTRUCTURAL DAMAGE:	NO ___	LIGHT X	MODERATE ___	SEVERE ___
COST OF REPAIR :	$ 57,500			

OBSERVATIONS:

DATA SHEET NUMBER: 16

BUILDING: Galeria Libertad Centro
ADDRESS : Libertad 466

NUMBER OF STORIES: 13 BASEMENTS: 1 HEIGHT: 38 m BUILDING AREA: 7,589 m^2

STRUCTURAL DESIGN:
WORK PERMIT : July 1980
FINAL RECEPTION : July 1981

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION:
PARTITIONS : Hollow brick masonry

CONCRETE: R_{28} = 300 kg/cm^2 STEEL : A63-42H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO ___ LIGHT X MODERATE X SEVERE ___
NONSTRUCTURAL DAMAGE: NO ___ LIGHT ___ MODERATE X SEVERE ___
COST OF REPAIR : $ 5,000,000

OBSERVATIONS: Commercial Center

DATA SHEET NUMBER: 17

BUILDING: Vicuña Mackena
ADDRESS : Plaza Vergara 142

NUMBER OF STORIES: 13 BASEMENTS: HEIGHT: 35 m BUILDING AREA: 3,879 m^2

STRUCTURAL DESIGN:
WORK PERMIT : 1962
FINAL RECEPTION : May 1966

FRAMING SYSTEM : Primarily structural walls
TYPE OF FOUNDATION:
PARTITIONS : Brick masonry

CONCRETE: R_{28} = kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO ___ LIGHT X MODERATE X SEVERE ___
NONSTRUCTURAL DAMAGE: NO ___ LIGHT ___ MODERATE X SEVERE ___
COST OF REPAIR : $ 300,000

OBSERVATIONS:

DATA SHEET NUMBER: 18

BUILDING: Jose Francisco Vergara
ADDRESS : Plaza Parroquia 325

NUMBER OF STORIES: 12 BASEMENTS: 1 HEIGHT: 37.8 m BUILDING AREA: 7,289 m^2

STRUCTURAL DESIGN: April 1958
WORK PERMIT :
FINAL RECEPTION :

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Mat foundation
PARTITIONS : Brick masonry

CONCRETE: R_{28} = kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO ___ LIGHT X MODERATE ___ SEVERE ___
COST OF REPAIR : $ 469,800

OBSERVATIONS:

DATA SHEET NUMBER: 19

BUILDING: Atalaya
ADDRESS : Peru 590

NUMBER OF STORIES: 12 BASEMENTS: 1 HEIGHT: 34.4 m BUILDING AREA: 4,992 m^2

STRUCTURAL DESIGN:
WORK PERMIT : 1967
FINAL RECEPTION : November 1969

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION:
PARTITIONS : Brick masonry

CONCRETE: R_{28} = 300 kg/cm^2 STEEL : A53-35H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS: One dimension of the plan decreases with height.

DATA SHEET NUMBER: 20

BUILDING: Coral
ADDRESS : San Martin 928

NUMBER OF STORIES: 12 BASEMENTS: 1 HEIGHT: 33.7 m BUILDING AREA: 8,318 m^2

STRUCTURAL DESIGN:
WORK PERMIT : November 1968
FINAL RECEPTION : May 1970

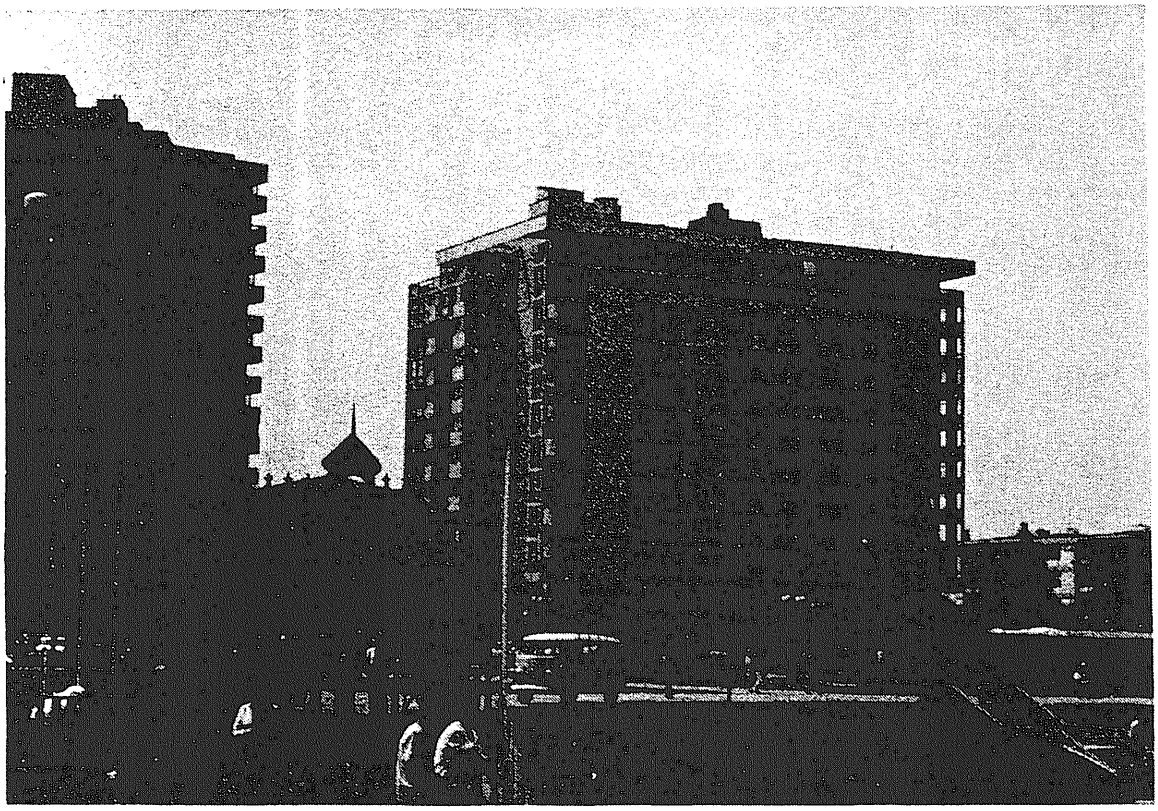
FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION:
PARTITIONS : Brick

CONCRETE: R_{28} = 300 kg/cm^2 STEEL : Twisted

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO ___ LIGHT ___ MODERATE X SEVERE X
NONSTRUCTURAL DAMAGE: NO ___ LIGHT ___ MODERATE ___ SEVERE X
COST OF REPAIR : $ 15,659,073

OBSERVATIONS: Mechanical level above 12th floor



DATA SHEET NUMBER: 21

BUILDING: Mediterraneo
ADDRESS : Corner of 4 Norte and 1 Oriente

NUMBER OF STORIES: 12 BASEMENTS: 1 HEIGHT: 32.8 m BUILDING AREA: 5,081 m^2

STRUCTURAL DESIGN: September 1980
WORK PERMIT : October 1980
FINAL RECEPTION : December 1981

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Mat and foundation beams, also individual footings
PARTITIONS :

CONCRETE: R_{28} = 300 kg/cm^2 STEEL : A63-42H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE :	NO X	LIGHT ___	MODERATE ___	SEVERE ___
NONSTRUCTURAL DAMAGE:	NO X	LIGHT ___	MODERATE ___	SEVERE ___
COST OF REPAIR :	$			

OBSERVATIONS: There is a mechanical level.

DATA SHEET NUMBER: 22

BUILDING: Plaza
ADDRESS : Plaza Vergara 60

NUMBER OF STORIES: 11 BASEMENTS: 1 HEIGHT: 34.2 m BUILDING AREA: 5,725 m^2

STRUCTURAL DESIGN: March 1960
WORK PERMIT : 1961
FINAL RECEPTION : November 1962

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Footings, cellular mat foundation
PARTITIONS : Brick pandereta

CONCRETE: R_{28} = 160 kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: 1.5 kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE :	NO ___	LIGHT X	MODERATE ___	SEVERE ___
NONSTRUCTURAL DAMAGE:	NO ___	LIGHT X	MODERATE X	SEVERE ___

COST OF REPAIR : $ 3,235,000

OBSERVATIONS: Commercial center in the first two stories.

DATA SHEET NUMBER: 23

BUILDING: Pontecasino
ADDRESS : Marina 110

NUMBER OF STORIES: 11 BASEMENTS: HEIGHT: 32 m BUILDING AREA: m^2

STRUCTURAL DESIGN:
WORK PERMIT :
FINAL RECEPTION :

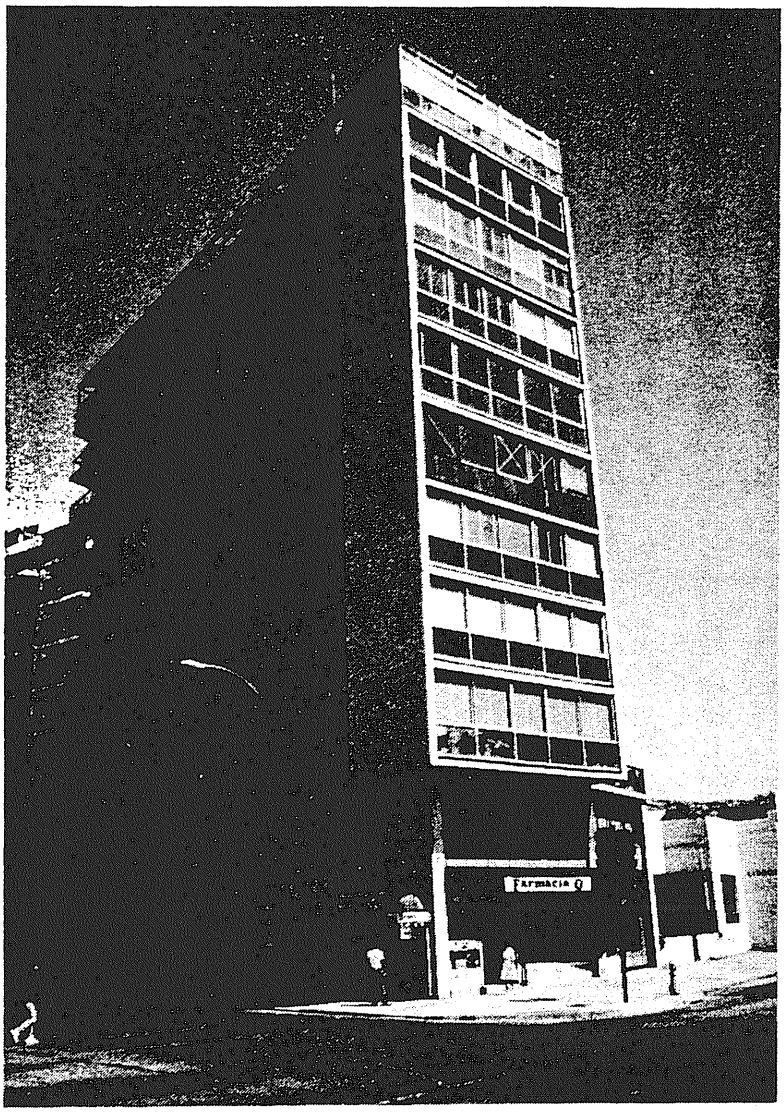
FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION:
PARTITIONS :

CONCRETE: R_{28} = kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS: There is a decrease in floor area at the 8th floor.



DATA SHEET NUMBER: 24

BUILDING: Solimar
ADDRESS : San Martin 120

NUMBER OF STORIES: 11 BASEMENTS: 1 HEIGHT: 32 m BUILDING AREA: 3,372 m^2

STRUCTURAL DESIGN:
WORK PERMIT : January 1977
FINAL RECEPTION : December 1978

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Mat foundation
PARTITIONS : Brick or prefabricated panels

CONCRETE: R_{28} = 300 kg/cm^2 STEEL : A63-42H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS: Water tank

DATA SHEET NUMBER: 25

BUILDING: Nuevo Centro 1
ADDRESS : Libertad 13-17

NUMBER OF STORIES: 11 BASEMENTS: HEIGHT: 31.5 m BUILDING AREA: 3,456 m^2

STRUCTURAL DESIGN: January 1975
WORK PERMIT : November 1976
FINAL RECEPTION : February 1978

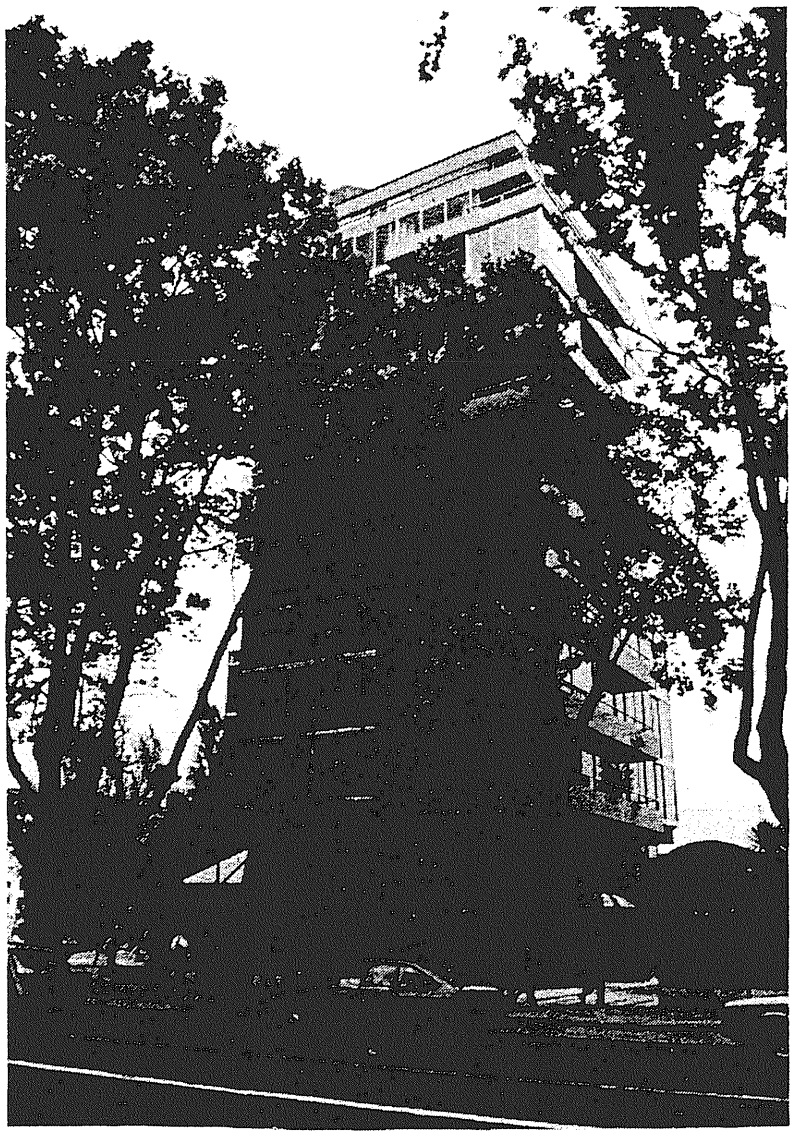
FRAMING SYSTEM : Coupled walls
TYPE OF FOUNDATION: Continuous footing and cellular mat foundation.
PARTITIONS :

CONCRETE: R_{28} = 225 kg/cm^2 STEEL : A63-42H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS: Commercial plaza



DATA SHEET NUMBER: 26

BUILDING: Maya
ADDRESS : San Martin 458

NUMBER OF STORIES: 11 BASEMENTS: 1 HEIGHT: 30.8 m BUILDING AREA: 3,527 m^2

STRUCTURAL DESIGN: November 1979
WORK PERMIT : August 1980
FINAL RECEPTION : August 1981

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Footings and foundation beams
PARTITIONS : Brick pandereta and volcanita

CONCRETE: R_{28} = 225 kg/cm^2 STEEL : A63-42H

ALLOWABLE SOIL PRESSURES STATIC: 2.9 kg/cm^2 DYNAMIC: 3.61 kg/cm^2

STRUCTURAL DAMAGE :	NO	X	LIGHT	___	MODERATE	___	SEVERE ___
NONSTRUCTURAL DAMAGE:	NO	X	LIGHT	___	MODERATE	___	SEVERE ___
COST OF REPAIR :	$						

OBSERVATIONS: The building is in the shape of a pyramid in one direction.

DATA SHEET NUMBER: 27

BUILDING: Tossa del Mar
ADDRESS : Avenida Peru 444

NUMBER OF STORIES: 11 BASEMENTS: HEIGHT: 30 m BUILDING AREA: 1,872 m^2

STRUCTURAL DESIGN:
WORK PERMIT : November 1973
FINAL RECEPTION :

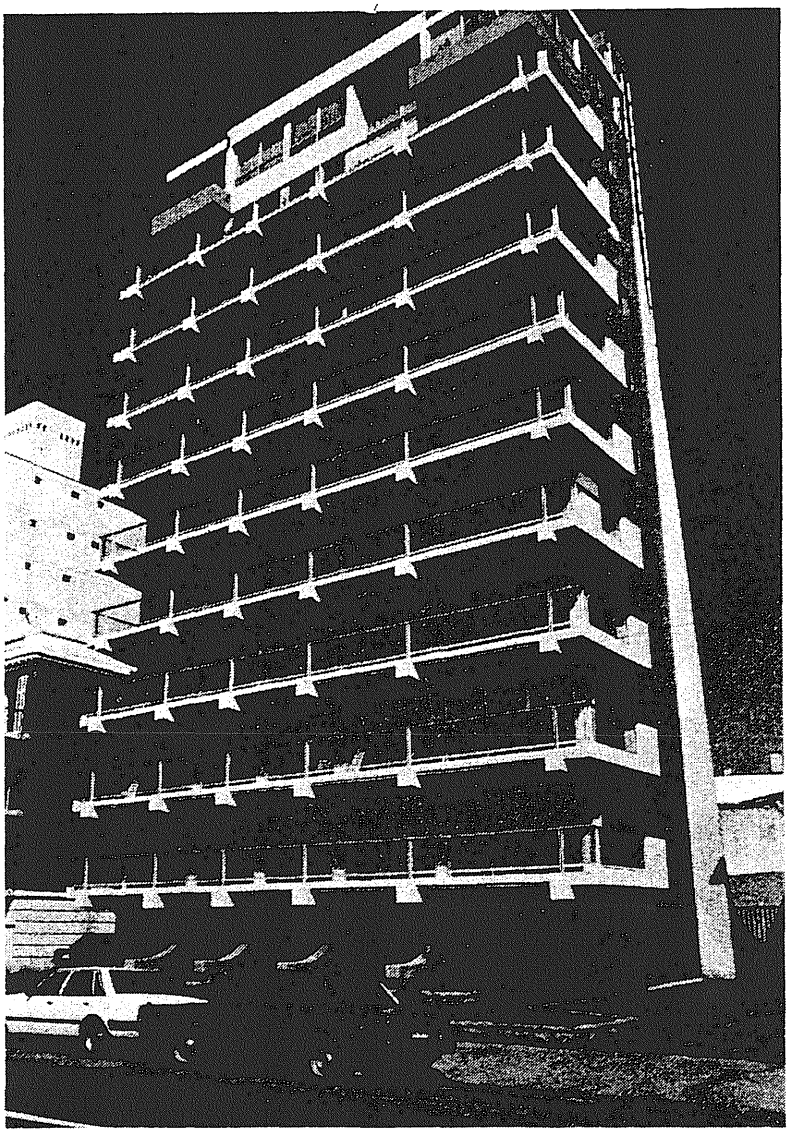
FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION:
PARTITIONS : Brick masonry

CONCRETE: R_{28} = kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO ___ LIGHT X MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO ___ LIGHT X MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS: Irregular shape.



DATA SHEET NUMBER: 28

BUILDING: Centro Mar
ADDRESS : San Martin 605

NUMBER OF STORIES: 11 BASEMENTS: HEIGHT: 30.0 m BUILDING AREA: 3,400 m^2

STRUCTURAL DESIGN:
WORK PERMIT : 1979
FINAL RECEPTION : 1980

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION:
PARTITIONS :

CONCRETE: R_{28} = kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE :	NO X	LIGHT ___	MODERATE ___	SEVERE ___
NONSTRUCTURAL DAMAGE:	NO ___	LIGHT X	MODERATE ___	SEVERE ___

COST OF REPAIR : $ 75,000

OBSERVATIONS:

DATA SHEET NUMBER: 29

BUILDING: Mirador
ADDRESS : Marina 72

NUMBER OF STORIES: 11 BASEMENTS: HEIGHT: 29 m BUILDING AREA: 9,103 m^2

STRUCTURAL DESIGN:
WORK PERMIT : 1978
FINAL RECEPTION : November 1979

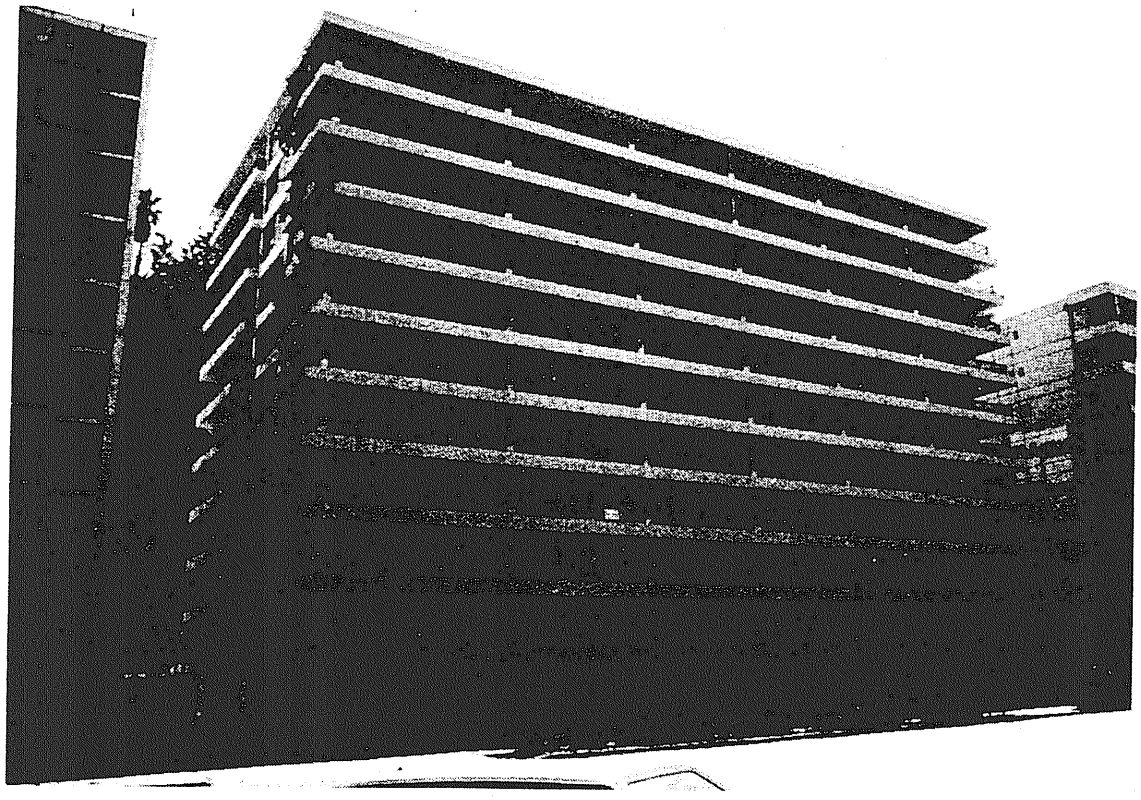
FRAMING SYSTEM :
TYPE OF FOUNDATION: Footings and foundation beams
PARTITIONS :

CONCRETE: R_{28} = 300 kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS:



DATA SHEET NUMBER: 30

BUILDING: Villa Sofia
ADDRESS : San Jose Oriente 277

NUMBER OF STORIES: 11 BASEMENTS: 2 HEIGHT: 28.4 m BUILDING AREA: 7,710 m^2

STRUCTURAL DESIGN:
WORK PERMIT : March 1981
FINAL RECEPTION : April 1983

FRAMING SYSTEM : Reinforced concrete walls at the base and masonry walls in the upper stories
TYPE OF FOUNDATION: Continuous footings and foundation beams
PARTITIONS : Brick pandereta

CONCRETE: R_{28} = kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS:

DATA SHEET NUMBER: 31

BUILDING: Millalebu
ADDRESS : Marina 156

NUMBER OF STORIES: 11 BASEMENTS: HEIGHT: 27.8 m BUILDING AREA: 2,026 m^2

STRUCTURAL DESIGN: July 1959
WORK PERMIT : December 1961
FINAL RECEPTION : May 1962

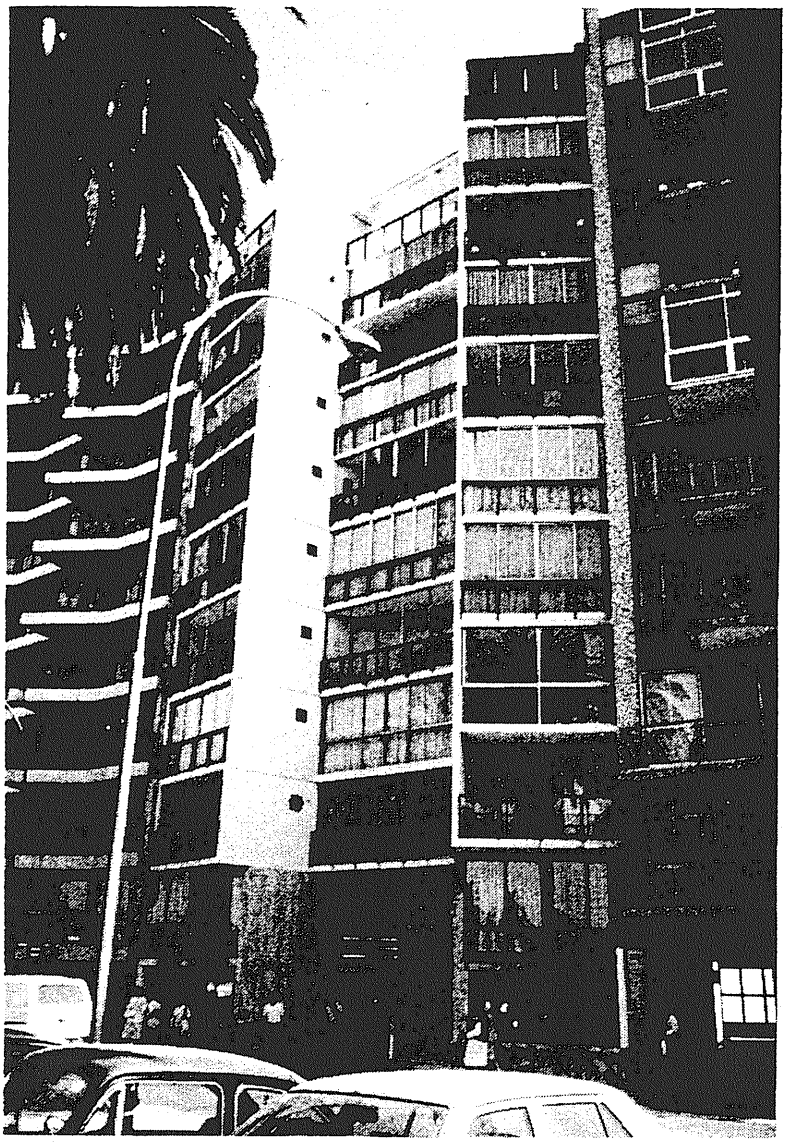
FRAMING SYSTEM : Coupled walls
TYPE OF FOUNDATION: Continuous footings, and cellular foundation
PARTITIONS :

CONCRETE: R_{28} = 225 kg/cm^2 STEEL : Twisted

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS:



DATA SHEET NUMBER: 32

BUILDING: Angelmo
ADDRESS : 7 Norte 476

NUMBER OF STORIES: 10 BASEMENTS: HEIGHT: 36.3 m BUILDING AREA: 2,483 m^2

STRUCTURAL DESIGN: October 1979
WORK PERMIT : December 1979
FINAL RECEPTION :

FRAMING SYSTEM : Structural walls and columns
TYPE OF FOUNDATION: Mat foundation
PARTITIONS : Brick masonry and pandereta

CONCRETE: R_{28} = 300 kg/cm^2 STEEL : A63-42H

ALLOWABLE SOIL PRESSURES STATIC: 2.0 kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE :	NO X	LIGHT ___	MODERATE ___	SEVERE ___
NONSTRUCTURAL DAMAGE:	NO X	LIGHT ___	MODERATE ___	SEVERE ___
COST OF REPAIR :	$			

OBSERVATIONS:

DATA SHEET NUMBER: 33

BUILDING: Ecuamar
ADDRESS : Ecuador 130

NUMBER OF STORIES: 10 BASEMENTS: HEIGHT: 34.9 m BUILDING AREA: 4,573 m^2

STRUCTURAL DESIGN: September 1979
WORK PERMIT : August 1980
FINAL RECEPTION : April 1981

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Slab and footing foundation
PARTITIONS :

CONCRETE: R_{28} = 300 kg/cm^2 STEEL : A63-42H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS:

DATA SHEET NUMBER: 34

BUILDING: El Escorial
ADDRESS : Plaza Vergara 177

NUMBER OF STORIES: 10 BASEMENTS: HEIGHT: 32.5 m BUILDING AREA: 6,952 m^2

STRUCTURAL DESIGN: November 1961
WORK PERMIT : 1961
FINAL RECEPTION : March 1965

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Mat foundation
PARTITIONS : Brick masonry and pandereta

CONCRETE: R_{28} = 225 kg/cm^2 STEEL : Twisted

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE :	NO ___	LIGHT X	MODERATE ___	SEVERE ___
NONSTRUCTURAL DAMAGE:	NO ___	LIGHT ___	MODERATE X	SEVERE ___
COST OF REPAIR :	$ 2,028,000			

OBSERVATIONS: Commercial center in the first two stories.

DATA SHEET NUMBER: 35

BUILDING: Danubio
ADDRESS : 2 Oriente 281

NUMBER OF STORIES: 10 BASEMENTS: 1 HEIGHT: 30.2 m BUILDING AREA: 4,003 m^2

STRUCTURAL DESIGN: December 1977
WORK PERMIT : December 1977
FINAL RECEPTION :

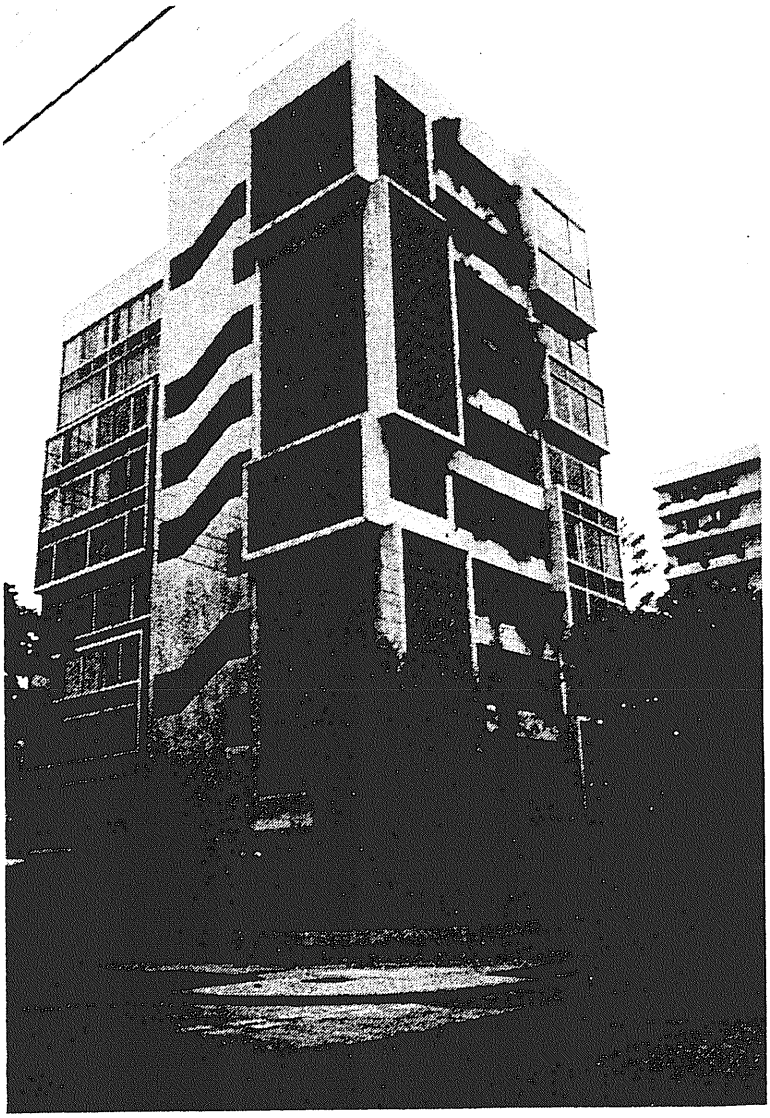
FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Mat foundation
PARTITIONS : Volcanita

CONCRETE: R_{28} = 300 kg/cm^2 STEEL : A63-42H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS:



DATA SHEET NUMBER: 36

BUILDING: Flamingo
ADDRESS : Valparaiso 169-175

NUMBER OF STORIES: 10 BASEMENTS: 1 HEIGHT: 29.8 m BUILDING AREA: 3,988 m^2

STRUCTURAL DESIGN:
WORK PERMIT : December 1962
FINAL RECEPTION : September 1965

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Footings, beams and slabs
PARTITIONS : Brick masonry

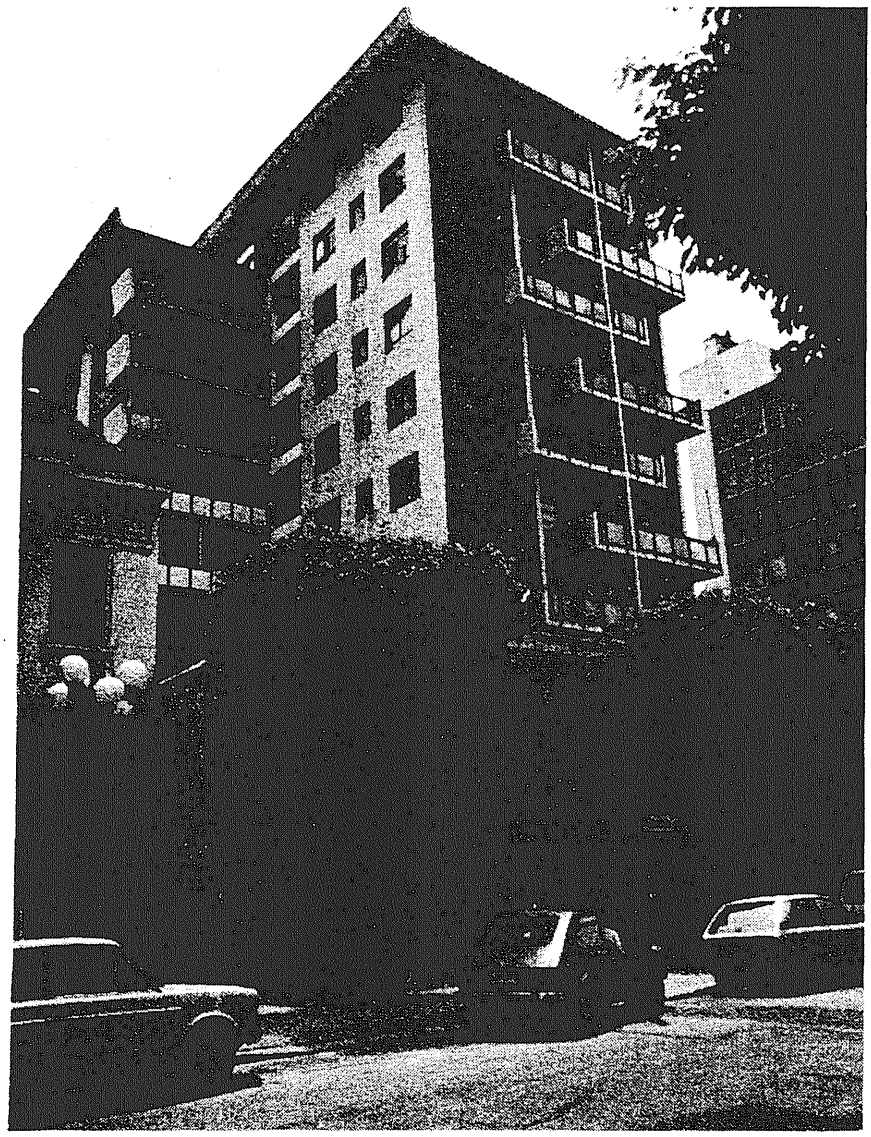
CONCRETE: R_{28} = 300 kg/cm^2 STEEL : A56-35H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE :	NO	X	LIGHT	___	MODERATE	___	SEVERE ___
NONSTRUCTURAL DAMAGE:	NO	X	LIGHT	___	MODERATE	___	SEVERE ___

COST OF REPAIR : $

OBSERVATIONS: Commercial plaza



DATA SHEET NUMBER: 37

BUILDING: Miami
ADDRESS : Marina 154

NUMBER OF STORIES: 10 BASEMENTS: 1 HEIGHT: 29.4 m BUILDING AREA: 2,539 m^2

STRUCTURAL DESIGN: January 1962
WORK PERMIT : November 1962
FINAL RECEPTION : November 1965

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION:
PARTITIONS : Brick masonry and pandereta

CONCRETE: R_{28} = kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS:

DATA SHEET NUMBER: 38

BUILDING: Isamar
ADDRESS : San Martin 236

NUMBER OF STORIES: 10 BASEMENTS: 1 HEIGHT: 29.0 m BUILDING AREA: 6,923 m^2

STRUCTURAL DESIGN:
WORK PERMIT : December 1968
FINAL RECEPTION : June 1972

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION:
PARTITIONS : Brick masonry and pandereta

CONCRETE: R_{28} = 225 kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE :	NO ___	LIGHT _X_	MODERATE ___	SEVERE ___
NONSTRUCTURAL DAMAGE:	NO ___	LIGHT ___	MODERATE _X_	SEVERE ___

COST OF REPAIR : $ 6,100,000

OBSERVATIONS: Combination of three independent structures.

DATA SHEET NUMBER: 39

BUILDING: Arlegui
ADDRESS : Arlegui 645

NUMBER OF STORIES: 10 BASEMENTS: 1 HEIGHT: 29 m BUILDING AREA: 6,340 m^2

STRUCTURAL DESIGN:
WORK PERMIT : 1957
FINAL RECEPTION :

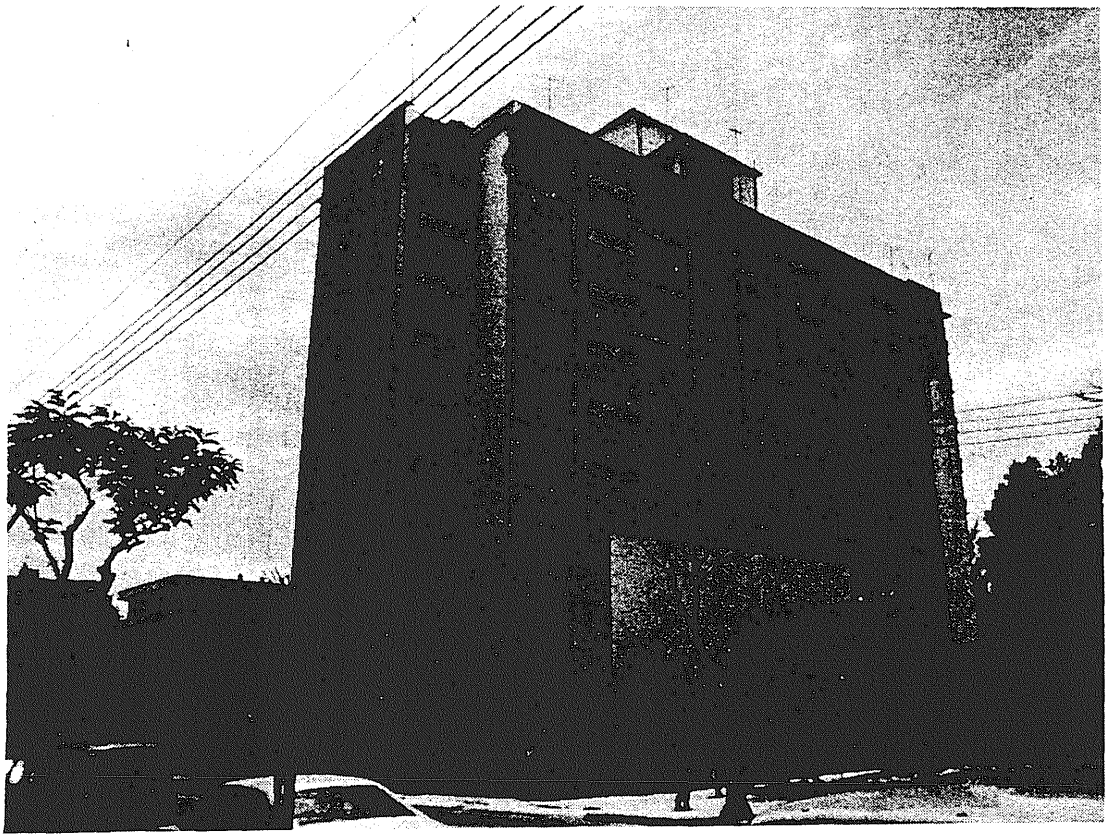
FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Footings and foundation beams (May have pile foundations)
PARTITIONS : Brick pandereta

CONCRETE: R_{28} = 218 kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO ___ LIGHT ___ MODERATE X SEVERE ___
NONSTRUCTURAL DAMAGE: NO ___ LIGHT ___ MODERATE X SEVERE ___
COST OF REPAIR : $ 1,750,000

OBSERVATIONS:



DATA SHEET NUMBER: 40

BUILDING: Antumalal
ADDRESS : Avenida Peru 680

NUMBER OF STORIES: 10 BASEMENTS: 1 HEIGHT: 29 m BUILDING AREA: 4,861 m^2

STRUCTURAL DESIGN:
WORK PERMIT : August 1962
FINAL RECEPTION : November 1969

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION:
PARTITIONS : Brick pandereta

CONCRETE: R_{28} = kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS: Irregular shape.

DATA SHEET NUMBER: 41

BUILDING: Ultramar
ADDRESS : 8 Norte 250

NUMBER OF STORIES: 10 BASEMENTS: 1 HEIGHT: 29 m BUILDING AREA: 3,529 m^2

STRUCTURAL DESIGN: April 1963
WORK PERMIT : December 1962
FINAL RECEPTION : August 1965

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Mat foundation
PARTITIONS : Brick masonry

CONCRETE: R_{28} = 300 kg/cm^2 STEEL : A56-35H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO ___ LIGHT X MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO ___ LIGHT X MODERATE X SEVERE ___
COST OF REPAIR : $

OBSERVATIONS:

DATA SHEET NUMBER: 42

BUILDING: Villa Real
ADDRESS : 4 Poniente 390

NUMBER OF STORIES: 10 BASEMENTS: 1 HEIGHT: 29 m BUILDING AREA: 2,763 m^2

STRUCTURAL DESIGN:
WORK PERMIT : 1981
FINAL RECEPTION : February 1983

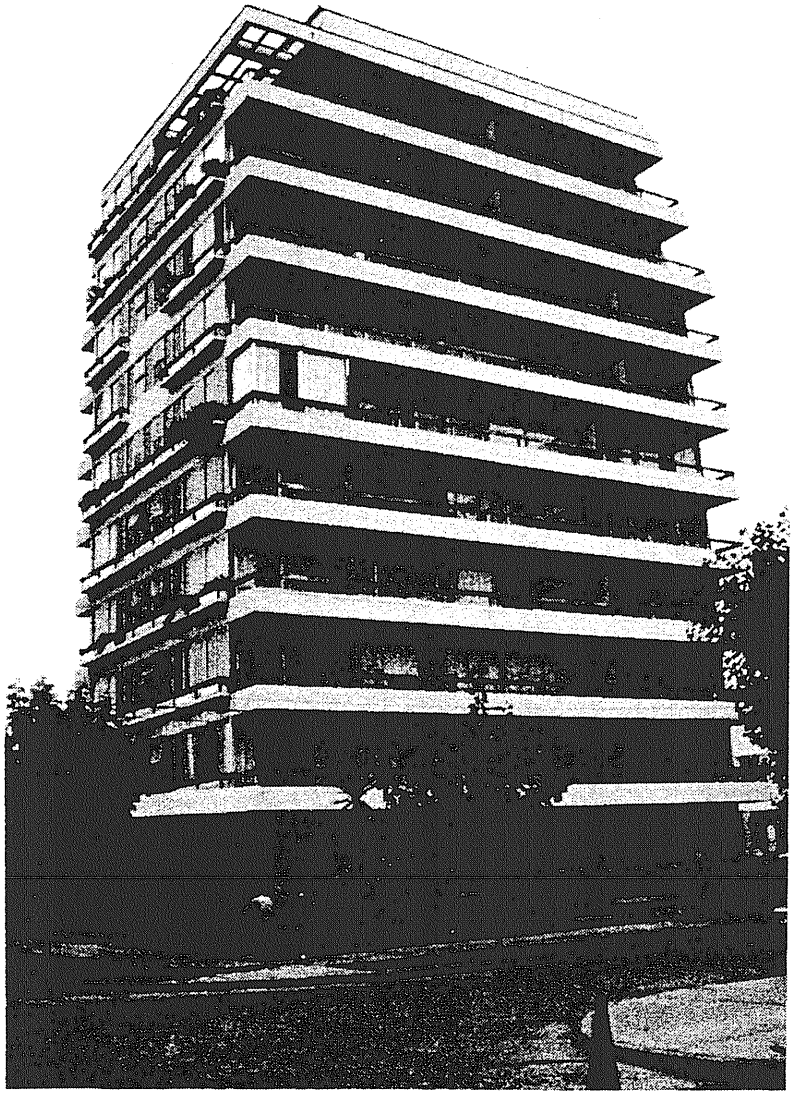
FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Mat Foundation
PARTITIONS : Volcanita, brick masonry

CONCRETE: R_{28} = 300 kg/cm^2 STEEL : A63-42H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO ___ LIGHT X MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO ___ LIGHT X MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS:



DATA SHEET NUMBER: 43

BUILDING: Rapa Nui
ADDRESS : Marina 198

NUMBER OF STORIES: 10 BASEMENTS: 1 HEIGHT: 29 m BUILDING AREA: 2,655 m^2

STRUCTURAL DESIGN: August 1962
WORK PERMIT : December 1962
FINAL RECEPTION : September 1971

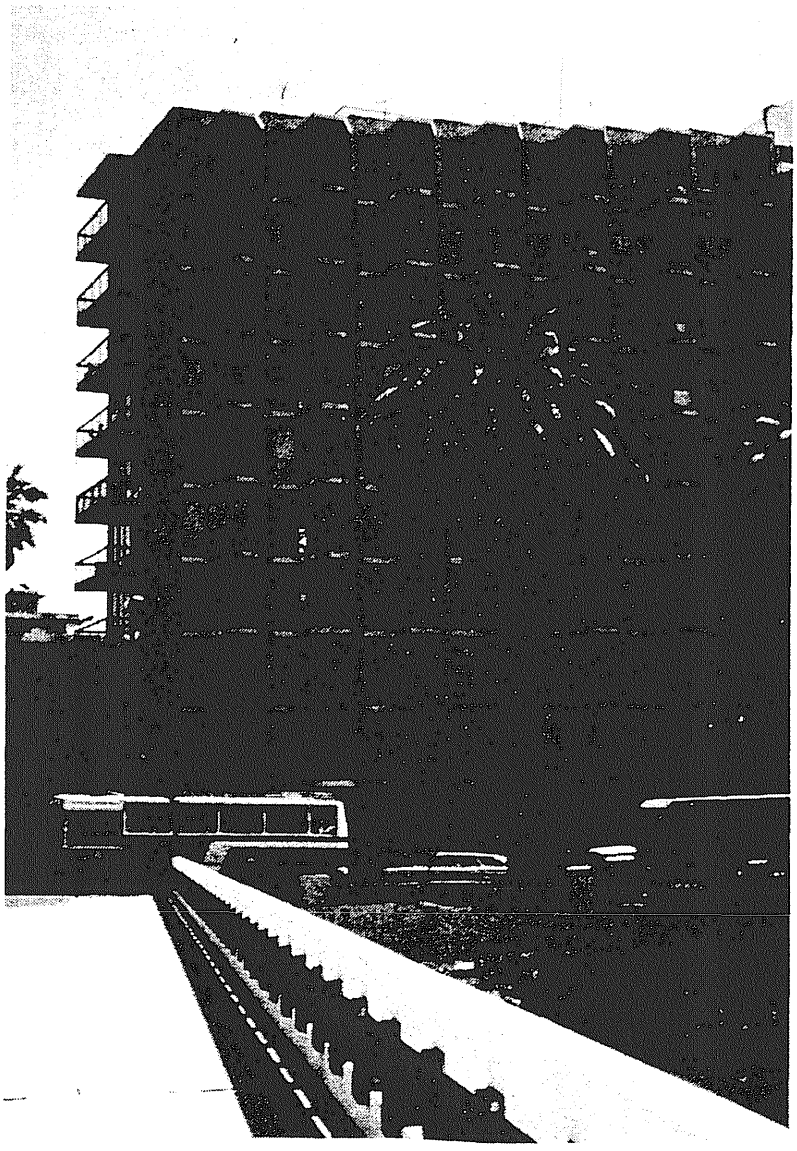
FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Continuous footings and foundation beams
PARTITIONS : Brick pandereta or hollow brick masonry

CONCRETE: R_{28} = 225 kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS: Mechanical level above the 10th story.



DATA SHEET NUMBER: 44

BUILDING: Italia (Cuerpo A)
ADDRESS : Valparaiso 230

NUMBER OF STORIES: 10 BASEMENTS: 1 HEIGHT: 28 m BUILDING AREA: 6,600 m^2

STRUCTURAL DESIGN:
WORK PERMIT : August 1959
FINAL RECEPTION : July 1962

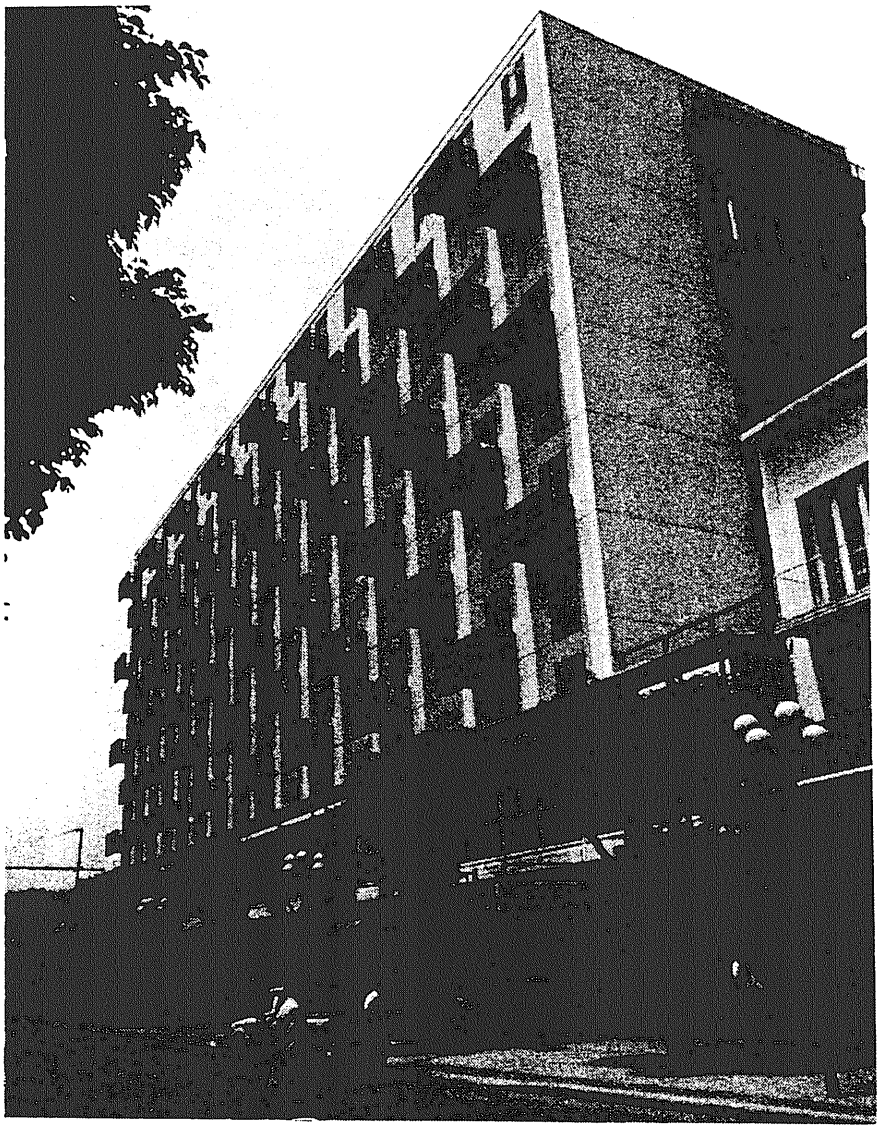
FRAMING SYSTEM : Primarily structural walls
TYPE OF FOUNDATION:
PARTITIONS : Brick pandereta

CONCRETE: R_{28} = kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS: Commercial plaza in the first two stories.



DATA SHEET NUMBER: 45

BUILDING: Italia (Cuerpo B)
ADDRESS : Valparaiso 230

NUMBER OF STORIES: 10 BASEMENTS: 1 HEIGHT: 28 m BUILDING AREA: 6,600 m^2

STRUCTURAL DESIGN:
WORK PERMIT : August 1959
FINAL RECEPTION : July 1962

FRAMING SYSTEM : Primarily structural walls
TYPE OF FOUNDATION:
PARTITIONS : Brick pandereta

CONCRETE: R_{28} = kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS: Commercial plaza in the first two stories.

DATA SHEET NUMBER: 46

BUILDING: Limari
ADDRESS : Etchevers 49

NUMBER OF STORIES: 10 BASEMENTS: 1 HEIGHT: 27.4 m BUILDING AREA: 2,144 m^2

STRUCTURAL DESIGN: May 1963
WORK PERMIT : December 1963
FINAL RECEPTION : March 1967

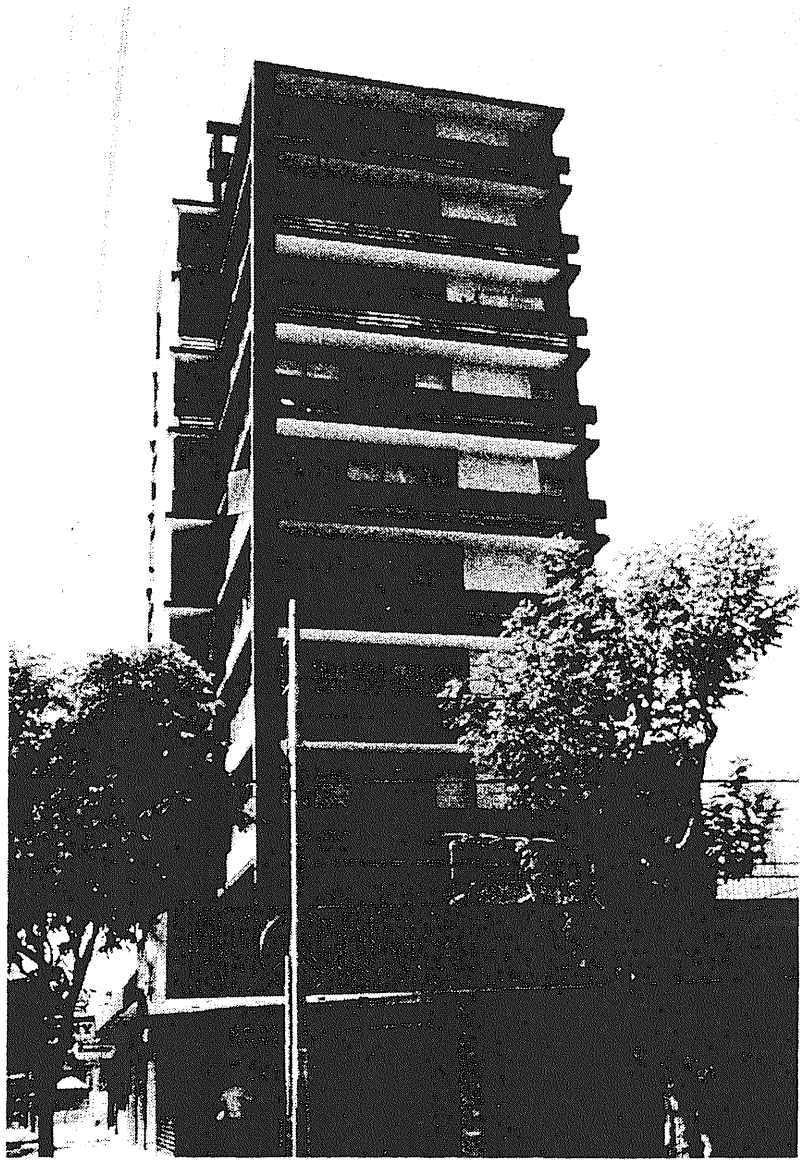
FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Continuous footing
PARTITIONS : Concrete block

CONCRETE: R_{28} = 225 kg/cm^2 STEEL : A56-35H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE :	NO	X	LIGHT	___	MODERATE	___	SEVERE ___
NONSTRUCTURAL DAMAGE:	NO	X	LIGHT	___	MODERATE	___	SEVERE ___
COST OF REPAIR :	$						

OBSERVATIONS: Commercial plaza



DATA SHEET NUMBER: 47

BUILDING: Doña Rosa and Don Benjamin
ADDRESS : 2 Oriente 610-628

NUMBER OF STORIES: 10 BASEMENTS: 1 HEIGHT: 27.2 m BUILDING AREA: 4,250 m^2

STRUCTURAL DESIGN: February 1979
WORK PERMIT : May 1979
FINAL RECEPTION : March 1981

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Mat foundation, foundation beams
PARTITIONS : Brick pandereta

CONCRETE: R_{28} = 300 kg/cm^2 STEEL : A63-42H

ALLOWABLE SOIL PRESSURES STATIC: 1.7 kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE :	NO X	LIGHT ___	MODERATE ___	SEVERE ___
NONSTRUCTURAL DAMAGE:	NO X	LIGHT ___	MODERATE ___	SEVERE ___
COST OF REPAIR :	$			

OBSERVATIONS: Two, ten-story buildings.

DATA SHEET NUMBER: 48

BUILDING: Las Palmas
ADDRESS : Marina 80

NUMBER OF STORIES: 10 BASEMENTS: HEIGHT: 27.1 m BUILDING AREA: 5,650 m^2

STRUCTURAL DESIGN: November 1954
WORK PERMIT : 1955
FINAL RECEPTION : March 1958

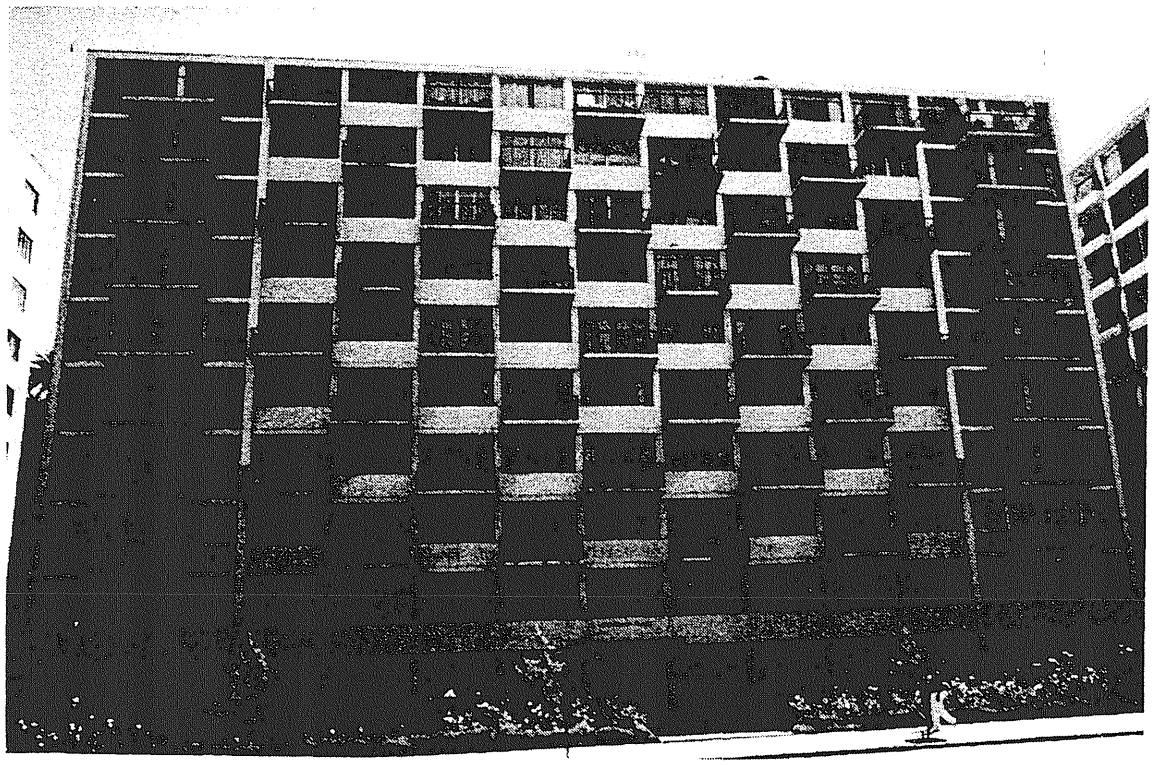
FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Continuous footing, foundation beams
PARTITIONS : Brick masonry

CONCRETE: R_{28} = kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS:



DATA SHEET NUMBER: 49

BUILDING: Copacabana
ADDRESS : Marina 84

NUMBER OF STORIES: 10 BASEMENTS: HEIGHT: 27 m BUILDING AREA: 8,486 m^2

STRUCTURAL DESIGN: May 1960
WORK PERMIT : 1961
FINAL RECEPTION : December 1961

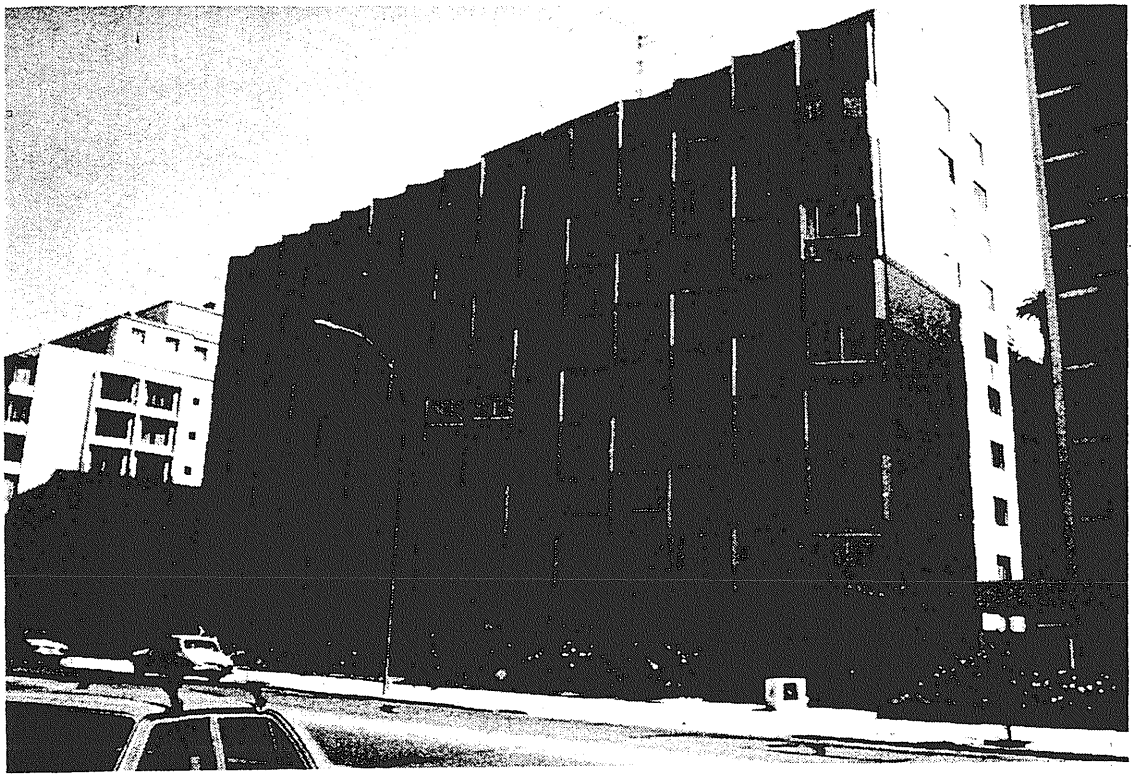
FRAMING SYSTEM : Coupled walls
TYPE OF FOUNDATION: Steel piles, reinforced concrete slabs and beams
PARTITIONS : Brick pandereta

CONCRETE: R_{28} = 225 kg/cm^2 STEEL : Twisted

ALLOWABLE SOIL PRESSURES STATIC: 1.47 kg/cm^2 DYNAMIC: 4.1 kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS:



DATA SHEET NUMBER: 50

BUILDING: Monte Carmelo
ADDRESS : 4 Norte 675

NUMBER OF STORIES: 10 BASEMENTS: 1 HEIGHT: 26.8 m BUILDING AREA: 4,249 m^2

STRUCTURAL DESIGN: June 1980
WORK PERMIT : September 1980
FINAL RECEPTION : August 1981

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Mat foundation
PARTITIONS : Bepolit covered with volcanita

CONCRETE: R_{28} = 300 kg/cm^2 STEEL : A63-42H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS:

DATA SHEET NUMBER: 51

BUILDING: Millahue
ADDRESS : 2 Oriente 41

NUMBER OF STORIES: 10 BASEMENTS: 1 HEIGHT: 26.6 m BUILDING AREA: 1,326 m^2

STRUCTURAL DESIGN:
WORK PERMIT : October 1962
FINAL RECEPTION : April 1968

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Mat foundation
PARTITIONS : Brick masonry and pandereta

CONCRETE: R_{28} = 225 kg/cm^2 STEEL : A56-35H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS:

DATA SHEET NUMBER: 52

BUILDING: Aliamapu
ADDRESS : Arlegui 547

NUMBER OF STORIES: 10 BASEMENTS: 1 HEIGHT: 26 m BUILDING AREA: 3,267 m^2

STRUCTURAL DESIGN:
WORK PERMIT : February 1970
FINAL RECEPTION : March 1974

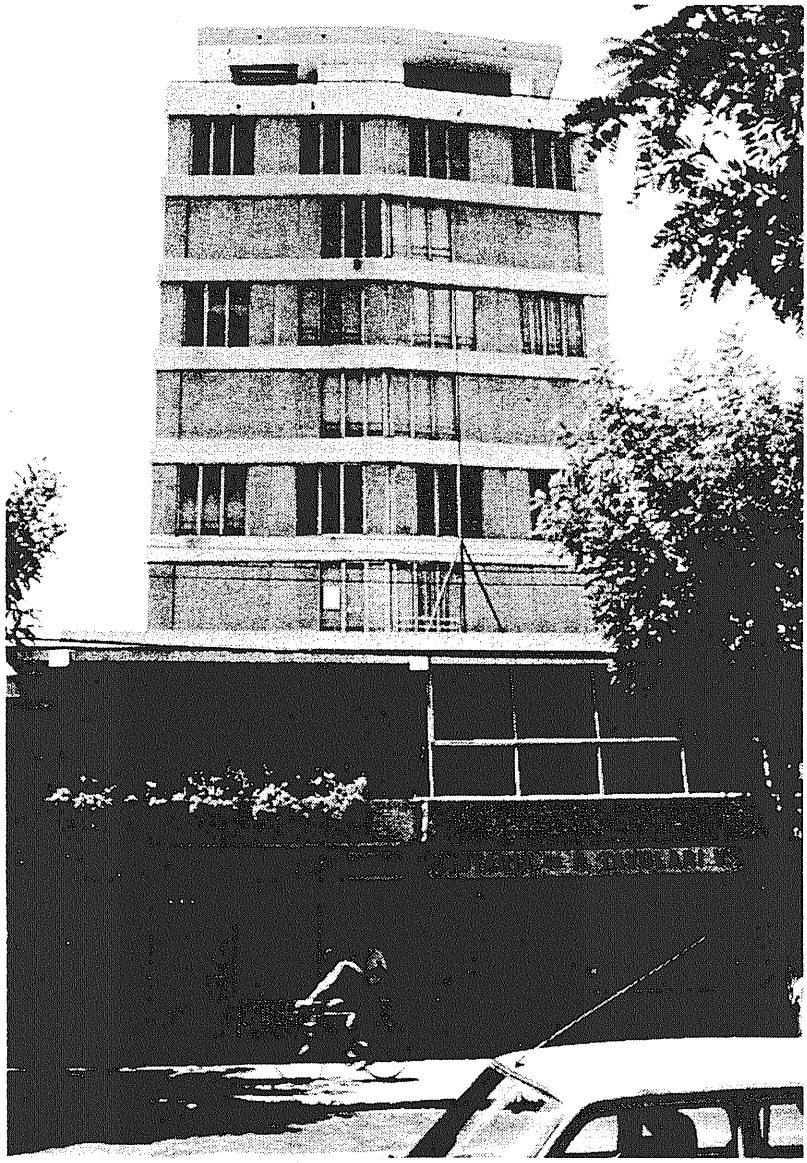
FRAMING SYSTEM : Structural walls, beams, columns and buttress
TYPE OF FOUNDATION:
PARTITIONS : Asbestos-cement panels

CONCRETE: R_{28} = kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO ___ LIGHT X MODERATE X SEVERE ___
COST OF REPAIR : $ 3,255,000

OBSERVATIONS: Commercial floor.



DATA SHEET NUMBER: 53

BUILDING: Arcadia
ADDRESS : Arlegui 440

NUMBER OF STORIES: 9 BASEMENTS: 1 HEIGHT: 31.5 m BUILDING AREA: 10,958 m^2

STRUCTURAL DESIGN: June 1980
WORK PERMIT : September 1980
FINAL RECEPTION : July 1982

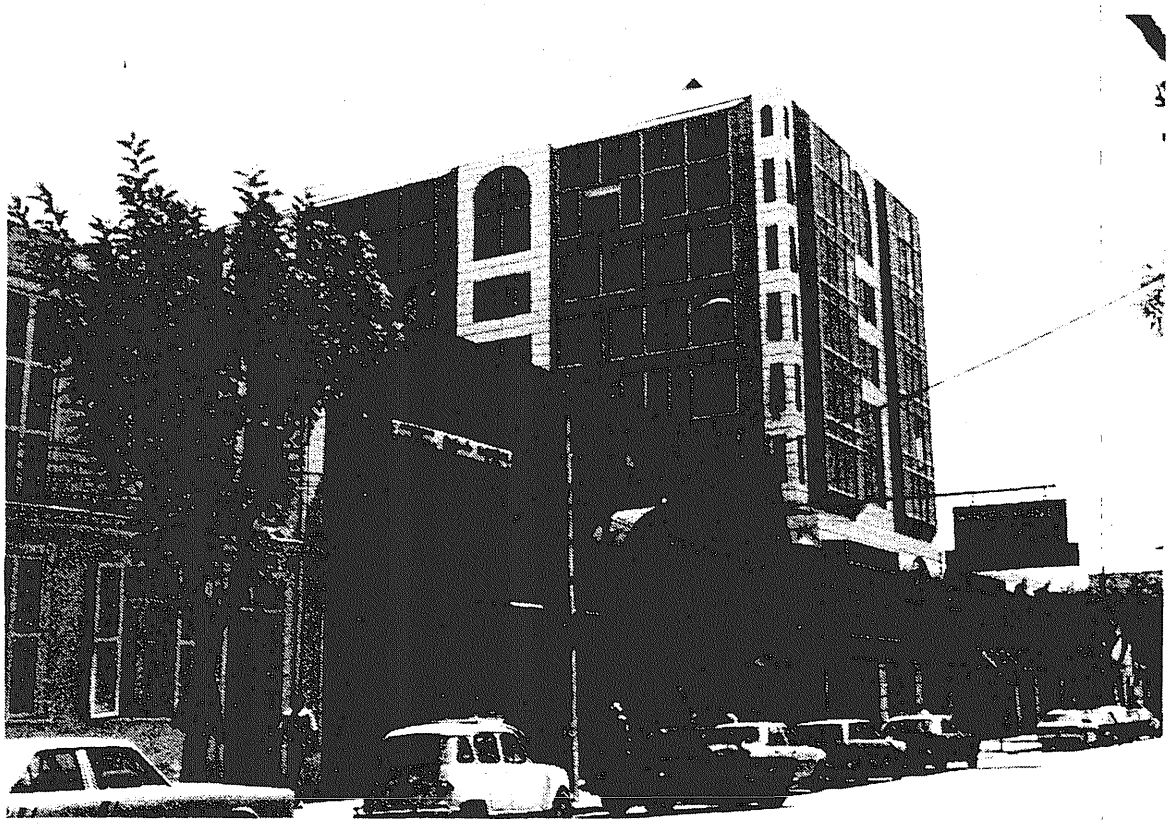
FRAMING SYSTEM : Frame
TYPE OF FOUNDATION: Slab on grade plus beams
PARTITIONS : Cement mortar and styrofoam panels

CONCRETE: R_{28} = 300 kg/cm^2 STEEL : A63-42H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO ___ LIGHT X MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO ___ LIGHT X MODERATE ___ SEVERE ___
COST OF REPAIR : $ 450,000

OBSERVATIONS: Commercial plaza. Drastic change of stiffness in 3rd level.



DATA SHEET NUMBER: 54

BUILDING: Rapallo
ADDRESS : Etchevers 229

NUMBER OF STORIES: 9 BASEMENTS: 1 HEIGHT: 28.5 m BUILDING AREA: 5,281 m^2

STRUCTURAL DESIGN:
WORK PERMIT : 1962
FINAL RECEPTION : October 1965

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Mat foundation
PARTITIONS : Hollow bricks, wood frame

CONCRETE: R_{28} = 225 kg/cm^2 STEEL : A56-35H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS:

DATA SHEET NUMBER: 55

BUILDING: Banco Español Chile
ADDRESS : Arlegui 682

NUMBER OF STORIES: 9 BASEMENTS: HEIGHT: 27.8 m BUILDING AREA: 2,973 m^2

STRUCTURAL DESIGN:
WORK PERMIT : August 1962
FINAL RECEPTION :

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Continuous footing
PARTITIONS : Brick pandereta

CONCRETE: R_{28} = 225 kg/cm^2 STEEL : A37-24H

ALLOWABLE SOIL PRESSURES STATIC: 2.5 kg/cm^2 DYNAMIC: 3.5 kg/cm^2

STRUCTURAL DAMAGE :	NO ___	LIGHT X	MODERATE ___	SEVERE ___
NONSTRUCTURAL DAMAGE:	NO ___	LIGHT ___	MODERATE X	SEVERE ___

COST OF REPAIR : $ 480,000

OBSERVATIONS:

DATA SHEET NUMBER: 56

BUILDING: San Antonio Centro
ADDRESS : Corner of 11 Norte and San Antonio

NUMBER OF STORIES: 9 BASEMENTS: 1 HEIGHT: 27.5 m BUILDING AREA: 11,298 m^2

STRUCTURAL DESIGN:
WORK PERMIT : June 1981
FINAL RECEPTION : April 1982

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION:
PARTITIONS : Brick pandereta

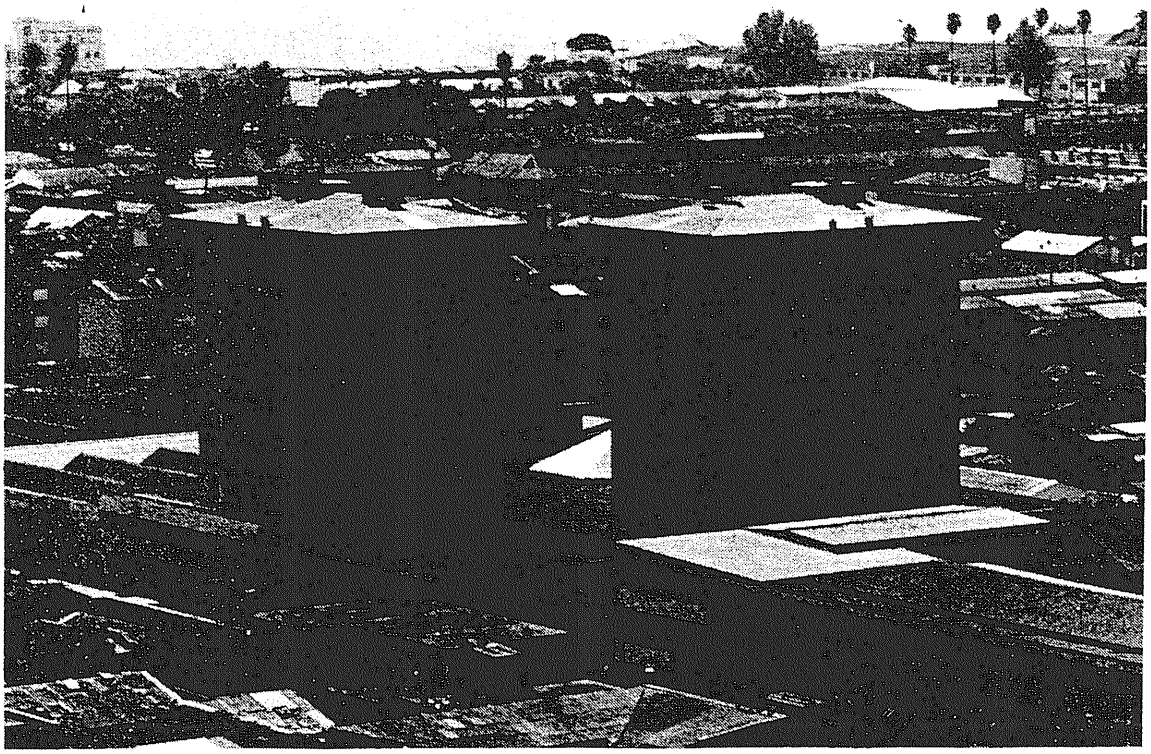
CONCRETE: R_{28} = 225 kg/cm^2 STEEL : A63-42H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE :	NO ___	LIGHT X	MODERATE ___	SEVERE ___
NONSTRUCTURAL DAMAGE:	NO ___	LIGHT X	MODERATE ___	SEVERE ___

COST OF REPAIR : $ 1,792,000

OBSERVATIONS: Two towers joined by commercial floor at levels 1 and 2.



DATA SHEET NUMBER: 57

BUILDING: Altamar
ADDRESS : San Martin 575

NUMBER OF STORIES: 9 BASEMENTS: 1 HEIGHT: 26.6 m BUILDING AREA: 2,711 m^2

STRUCTURAL DESIGN:
WORK PERMIT : April 1979
FINAL RECEPTION : May 1980

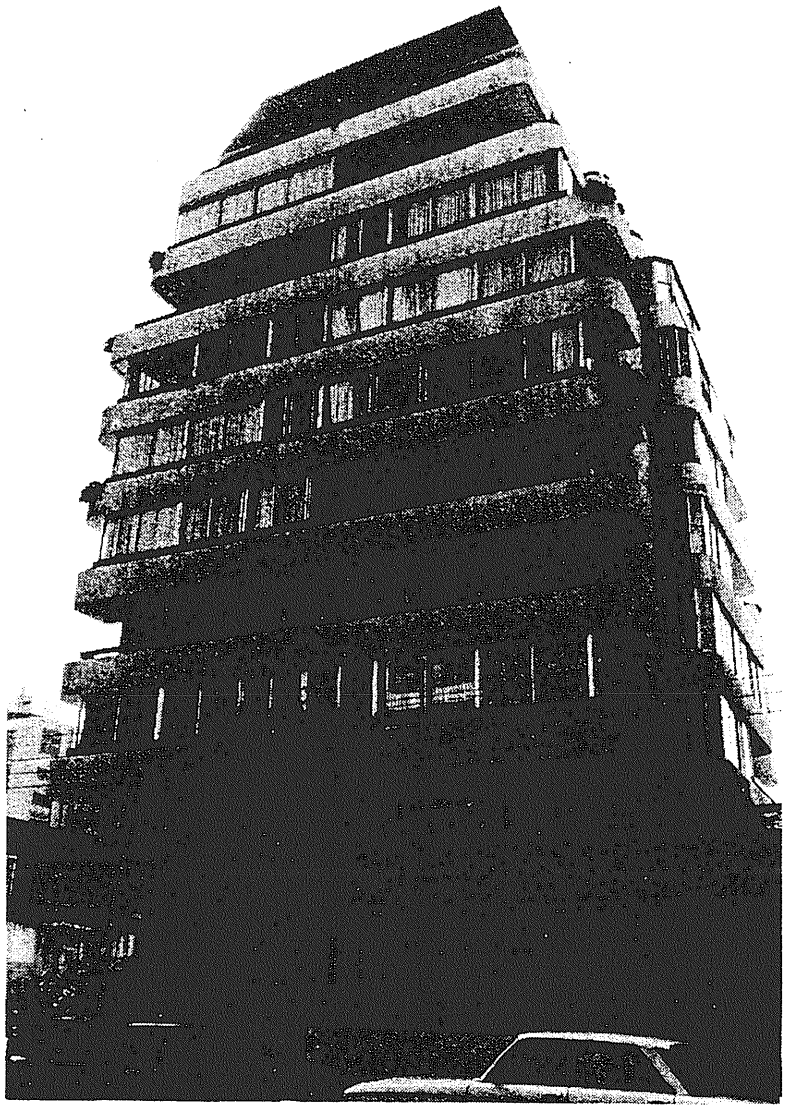
FRAMING SYSTEM : Primarily structural walls
TYPE OF FOUNDATION: Continuous footings
PARTITIONS : Hollow bricks and volcanita

CONCRETE: R_{28} = kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS: 20 cm bricks



DATA SHEET NUMBER: 58

BUILDING: Los Alamos
ADDRESS : 3 Norte 207

NUMBER OF STORIES: 9 BASEMENTS: 1 HEIGHT: 26 m BUILDING AREA: 2,544 m^2

STRUCTURAL DESIGN:
WORK PERMIT : 1962
FINAL RECEPTION : December 1967

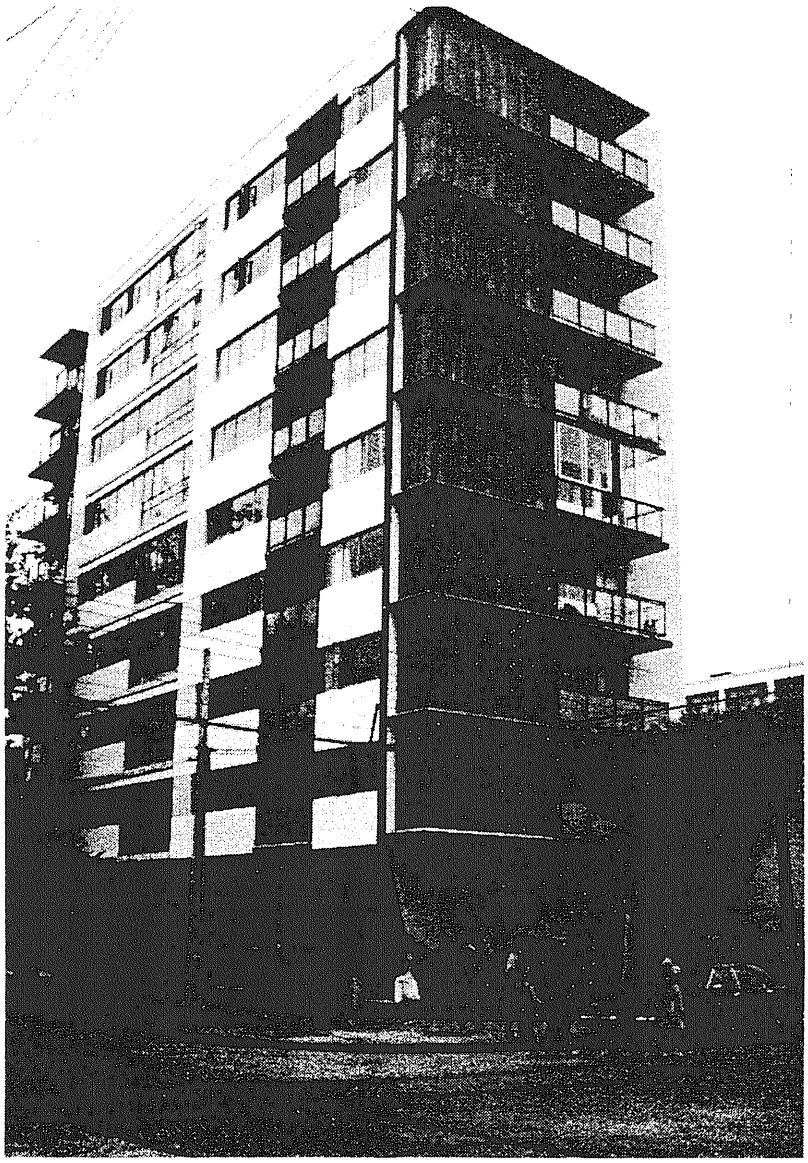
FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION:
PARTITIONS : Hollow brick

CONCRETE: R_{28} = kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO ___ LIGHT X MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO ___ LIGHT ___ MODERATE X SEVERE ___
COST OF REPAIR : $ 380,248

OBSERVATIONS:



DATA SHEET NUMBER: 59

BUILDING: Las Terrazas
ADDRESS : 5 Poniente 336

NUMBER OF STORIES: 9 BASEMENTS: 1 HEIGHT: 26.0 m BUILDING AREA: 2,554 m^2

STRUCTURAL DESIGN: November 1980
WORK PERMIT : February 1981
FINAL RECEPTION : March 1983

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Mat foundation
PARTITIONS : Hollow brick, wood frame and volcanita

CONCRETE: R_{28} = 300 kg/cm^2 STEEL : A63-42H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS:

DATA SHEET NUMBER: 60

BUILDING: El Mar
ADDRESS : Vicuña Mackenna

NUMBER OF STORIES: 9 BASEMENTS: 1 HEIGHT: 25.6 m BUILDING AREA: 4,401 m^2

STRUCTURAL DESIGN:
WORK PERMIT : 1980
FINAL RECEPTION : September 1981

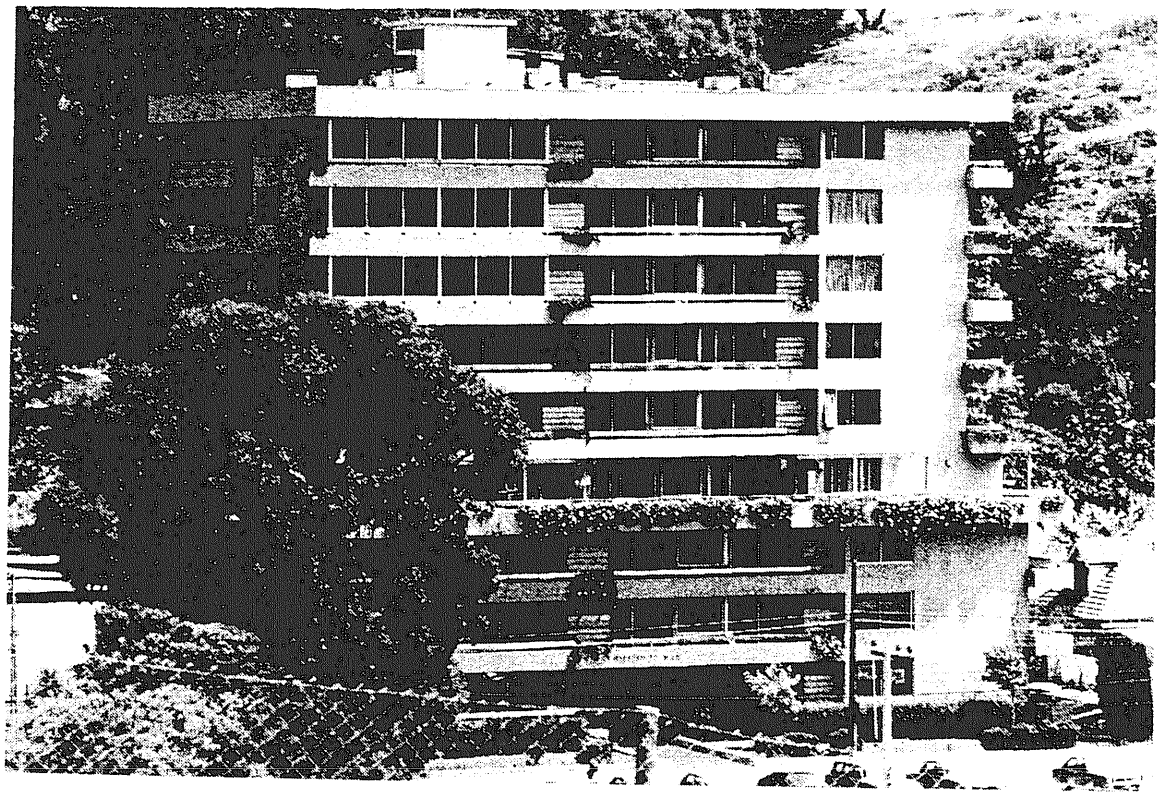
FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Mat foundation
PARTITIONS :

CONCRETE: R_{28} = 300 kg/cm^2 STEEL : A63-42H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS: Located in Reñaca.



DATA SHEET NUMBER: 61

BUILDING: Ancona
ADDRESS : 7 Norte 65

NUMBER OF STORIES: 9 BASEMENTS: HEIGHT: 25.6 m BUILDING AREA: 1,497 m^2

STRUCTURAL DESIGN: January 1977
WORK PERMIT : July 1977
FINAL RECEPTION : March 1979

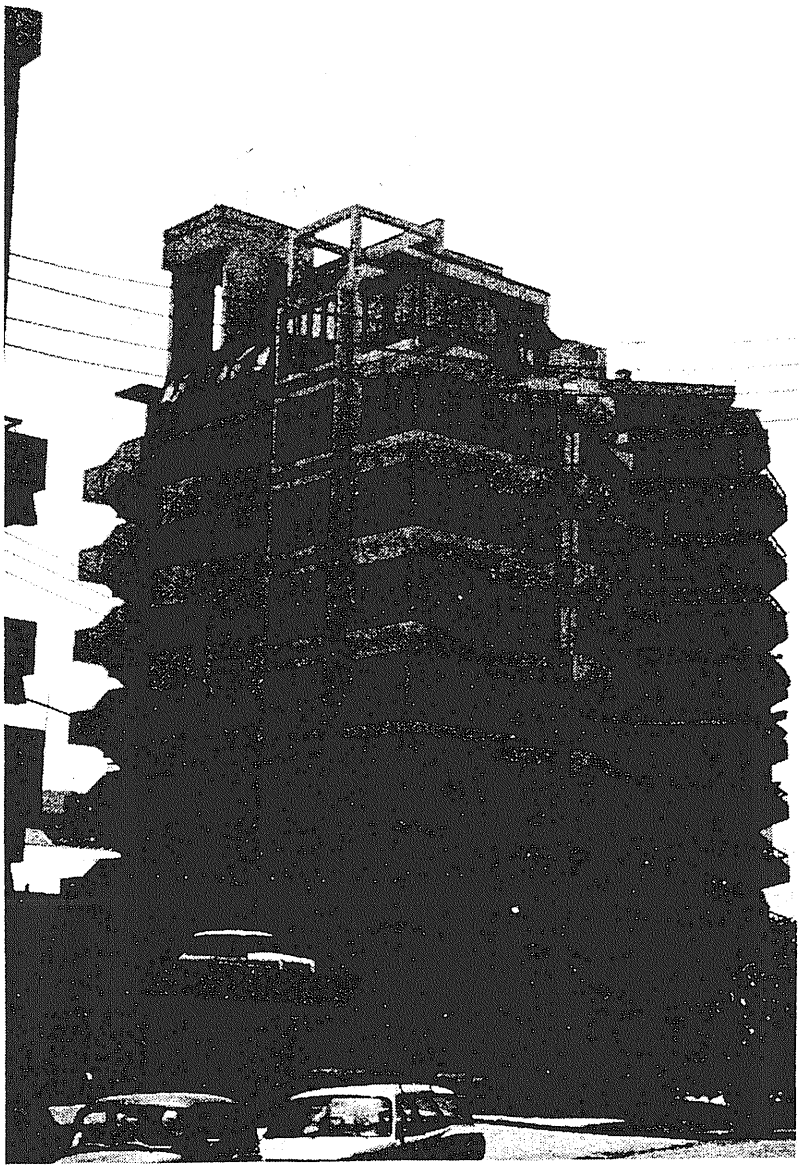
FRAMING SYSTEM : Reinforced concrete walls, masonry walls
TYPE OF FOUNDATION: Slab and individual footings tied by beams
PARTITIONS : Hollow brick

CONCRETE: R_{28} = 300 kg/cm^2 STEEL : A63-42H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS:



DATA SHEET NUMBER: 62

BUILDING: Marina
ADDRESS : Marina 94

NUMBER OF STORIES: 9 BASEMENTS: 1 HEIGHT: 25.5 m BUILDING AREA: 8,149 m^2

STRUCTURAL DESIGN: July 1953
WORK PERMIT : 1955
FINAL RECEPTION : April 1961

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION:
PARTITIONS : Hollow brick

CONCRETE: R_{28} = kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO ___ LIGHT X MODERATE ___ SEVERE ___
COST OF REPAIR : $ 100,000

OBSERVATIONS: With water tank

DATA SHEET NUMBER: 63

BUILDING: Sausalito
ADDRESS : 7 Norte 52

NUMBER OF STORIES: 9 BASEMENTS: 1 HEIGHT: 25.2 m BUILDING AREA: 2,639 m^2

STRUCTURAL DESIGN:
WORK PERMIT : December 1962
FINAL RECEPTION :

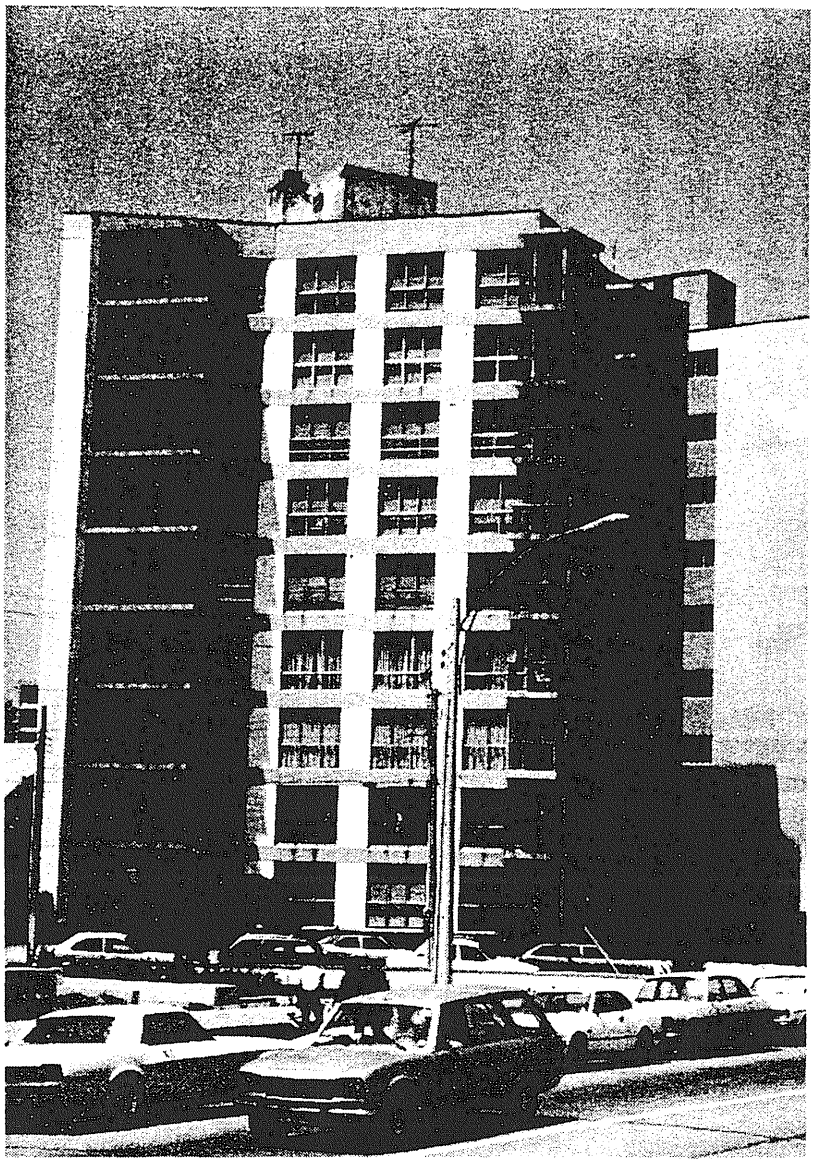
FRAMING SYSTEM : Structural Walls
TYPE OF FOUNDATION:
PARTITIONS : Hollow brick pandereta and concrete blocks (7 cm wide)

CONCRETE: R_{28} = 300 kg/cm^2 STEEL : A56-35

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS:



DATA SHEET NUMBER: 64

BUILDING: Fontana
ADDRESS : 2 Norte 17

NUMBER OF STORIES: 9 BASEMENTS: 1 HEIGHT: 25 m BUILDING AREA: 1,747 m^2

STRUCTURAL DESIGN: March 1962
WORK PERMIT : August 1962
FINAL RECEPTION : October 1964

FRAMING SYSTEM : Structural walls and columns
TYPE OF FOUNDATION: Mat foundation and continuous footing
PARTITIONS : Hollow bricks

CONCRETE: R_{28} = 180 kg/cm^2 STEEL : A44-28H

ALLOWABLE SOIL PRESSURES STATIC: 1.3 kg/cm^2 DYNAMIC: 2.0 kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS: Water tank

DATA SHEET NUMBER: 65

BUILDING: Antílco
ADDRESS : 5 Norte 161-169

NUMBER OF STORIES: 9 BASEMENTS: 1 HEIGHT: 25.0 m BUILDING AREA: 2,241 m^2

STRUCTURAL DESIGN:
WORK PERMIT : 1962
FINAL RECEPTION : July 1966

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Mat with beams
PARTITIONS : Termofor panels (wood chips, cement, and gypsum)

CONCRETE: R_{28} = 225 kg/cm^2 STEEL : A56-35H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO ___ LIGHT X MODERATE ___ SEVERE ___
COST OF REPAIR : $ 105,000

OBSERVATIONS:

DATA SHEET NUMBER: 66

BUILDING: El Faro (Reñaca)
ADDRESS : La Joya 109

NUMBER OF STORIES: 9(*) BASEMENTS: 1 HEIGHT: 24.9 m BUILDING AREA: 1,250 m^2

STRUCTURAL DESIGN: March 1979
WORK PERMIT : November 1980
FINAL RECEPTION : December 1981

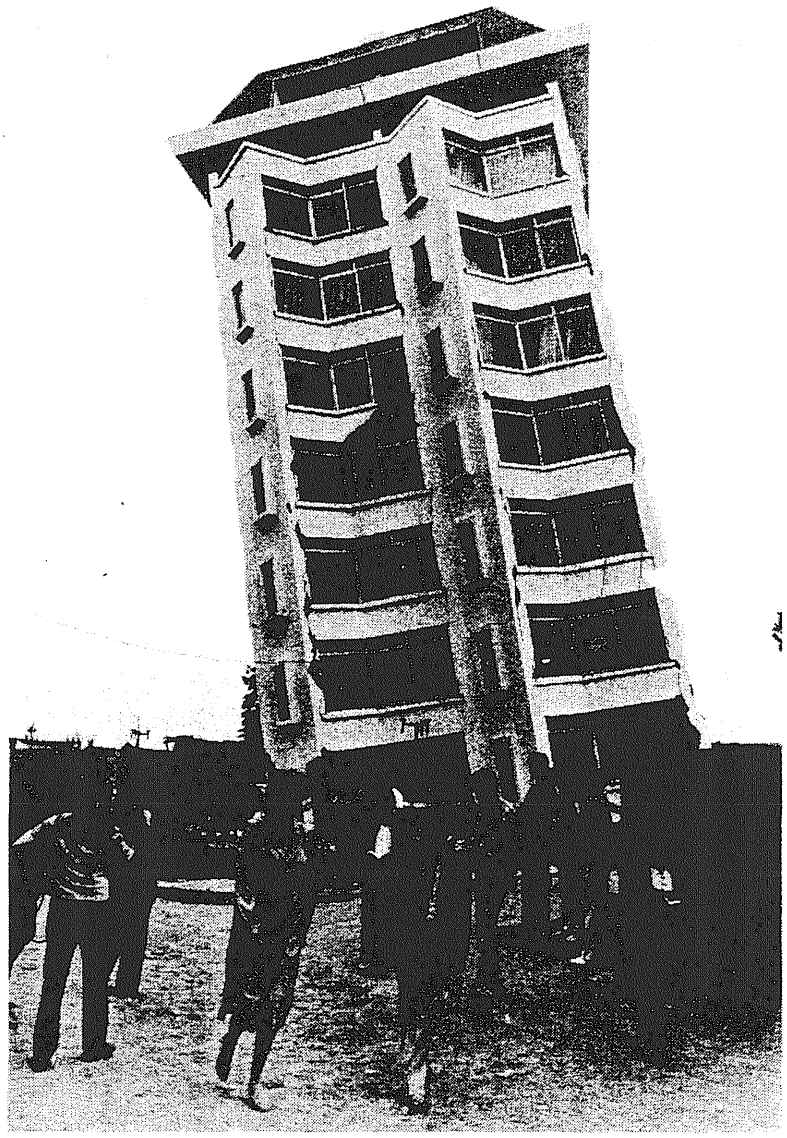
FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Continuous footings
PARTITIONS : Brick pandereta

CONCRETE: R_{28} = 225 kg/cm^2 STEEL : A63-42H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE :	NO ___	LIGHT ___	MODERATE ___	SEVERE X
NONSTRUCTURAL DAMAGE:	NO ___	LIGHT ___	MODERATE ___	SEVERE X
COST OF LOSS :	$ 62,500,000			

OBSERVATIONS: Walls collapsed in first story. (*) Eight stories plus attic.



DATA SHEET NUMBER: 67

BUILDING: El Recreo
ADDRESS : Subida Condell 38

NUMBER OF STORIES: 9 BASEMENTS: 1 HEIGHT: 24.7 m BUILDING AREA: 1,261 m^2

STRUCTURAL DESIGN:
WORK PERMIT : November 1969
FINAL RECEPTION : April 1971

FRAMING SYSTEM : Reinforced concrete walls and confined masonry
TYPE OF FOUNDATION:
PARTITIONS : Hollow brick pandereta

CONCRETE: R_{28} = kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS:

DATA SHEET NUMBER: 68

BUILDING: Las Achiras
ADDRESS : 3 Norte 444

NUMBER OF STORIES: 9 BASEMENTS: 1 HEIGHT: 24.7 m BUILDING AREA: 2,464 m^2

STRUCTURAL DESIGN: March 1964
WORK PERMIT : December 1964
FINAL RECEPTION : April 1966

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Mat foundation and continuous footings
PARTITIONS : Brick masonry

CONCRETE: R_{28} = 225 kg/cm^2 STEEL : A56-35H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO ___ LIGHT X MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO ___ LIGHT ___ MODERATE X SEVERE ___
COST OF REPAIR : $ 441,480

OBSERVATIONS: Water tank.

DATA SHEET NUMBER: 69

BUILDING: Mallorca
ADDRESS : 2 Norte 660

NUMBER OF STORIES: 9 BASEMENTS: 1 HEIGHT: 24.6 m BUILDING AREA: 3,181 m^2

STRUCTURAL DESIGN: August 1962
WORK PERMIT : December 1962
FINAL RECEPTION : October 1975

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Continuous footing
PARTITIONS : Brick pandereta

CONCRETE: R_{28} = 225 kg/cm^2 STEEL : Twisted

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS: Water tank

DATA SHEET NUMBER: 70

BUILDING: Castilla
ADDRESS : Valparaiso 426

NUMBER OF STORIES: 9 BASEMENTS: HEIGHT: 24.5 m BUILDING AREA: 2,221 m^2

STRUCTURAL DESIGN: December 1962
WORK PERMIT : 1962
FINAL RECEPTION : October 1966

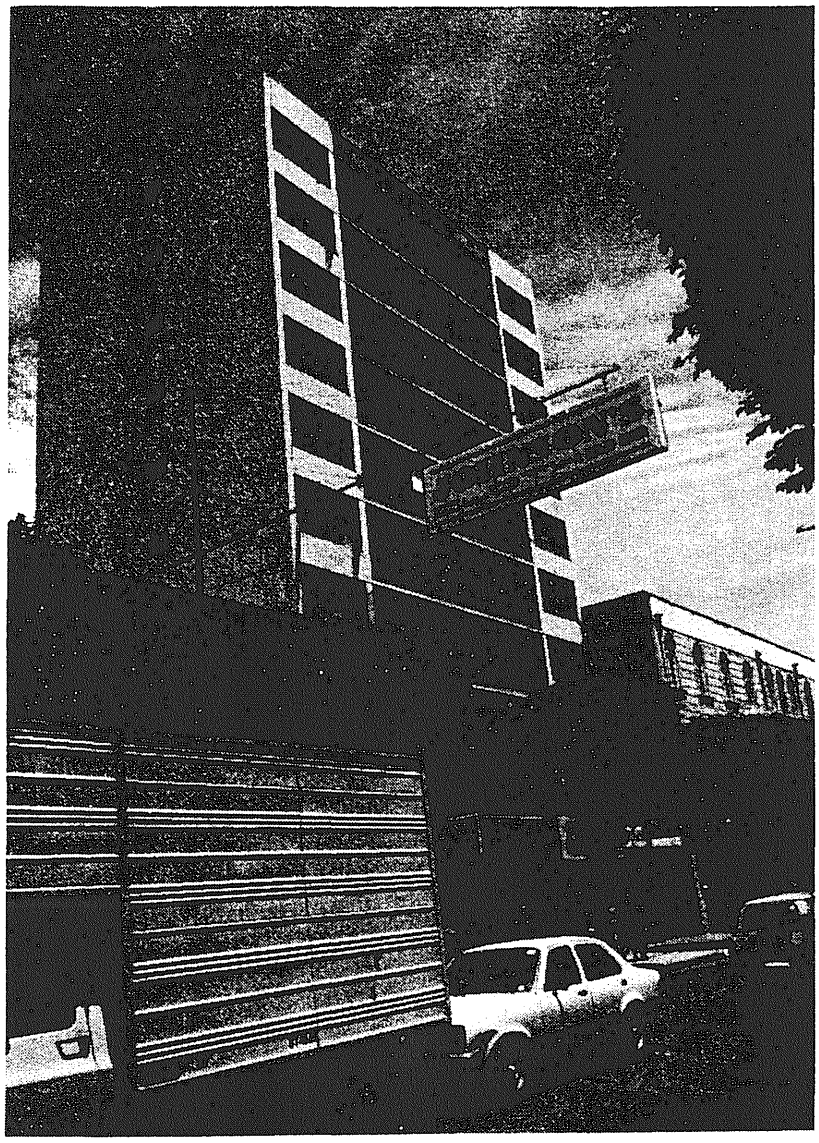
FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Mat foundation
PARTITIONS : Hollow brick pandereta

CONCRETE: R_{28} = 225 kg/cm^2 STEEL : A56-35H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS:



DATA SHEET NUMBER: 71

BUILDING: Riviera
ADDRESS : 3 Norte 60

NUMBER OF STORIES: 9 BASEMENTS: 1 HEIGHT: 24.4 m BUILDING AREA: 2,314 m^2

STRUCTURAL DESIGN: April 1962
WORK PERMIT : August 1962
FINAL RECEPTION : August 1964

FRAMING SYSTEM : Reinforced concrete and masonry walls
TYPE OF FOUNDATION: Mat foundation
PARTITIONS : Hollow brick

CONCRETE: R_{28} = 180 kg/cm^2 STEEL : A44-28H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE :	NO X	LIGHT ___	MODERATE ___	SEVERE ___
NONSTRUCTURAL DAMAGE:	NO ___	LIGHT X	MODERATE ___	SEVERE ___
COST OF REPAIR :	$ 134,781			

OBSERVATIONS: Very irregular shape.

DATA SHEET NUMBER: 72

BUILDING: Lautaro
ADDRESS : Arlegui 160

NUMBER OF STORIES: 9 BASEMENTS: 2 HEIGHT: 24.2 m BUILDING AREA: 9,263 m^2

STRUCTURAL DESIGN:
WORK PERMIT : February 1981
FINAL RECEPTION : September 1982

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION:
PARTITIONS : Prefabricated cepolita panels

CONCRETE: R_{28} = kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS: Commercial plaza.

DATA SHEET NUMBER: 73

BUILDING: America
ADDRESS : Arlegui 580

NUMBER OF STORIES: 9 BASEMENTS: 1 HEIGHT: 24 m BUILDING AREA: 2,464 m^2

STRUCTURAL DESIGN:
WORK PERMIT : January 1970
FINAL RECEPTION :

FRAMING SYSTEM :
TYPE OF FOUNDATION:
PARTITIONS :

CONCRETE: R_{28} = kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS:

DATA SHEET NUMBER: 74

BUILDING: Viana
ADDRESS : Viana 345

NUMBER OF STORIES: 9 BASEMENTS: HEIGHT: 24 m BUILDING AREA: m^2

STRUCTURAL DESIGN:
WORK PERMIT :
FINAL RECEPTION :

FRAMING SYSTEM :
TYPE OF FOUNDATION:
PARTITIONS :

CONCRETE: R_{28} = kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO ___ LIGHT X MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO ___ LIGHT ___ MODERATE X SEVERE ___
COST OF REPAIR : $ 416,250

OBSERVATIONS:

DATA SHEET NUMBER: 75

BUILDING: Brasilia
ADDRESS : Etchevers 268

NUMBER OF STORIES: 9 BASEMENTS: 1 HEIGHT: 23.9 m BUILDING AREA: 2,073 m^2

STRUCTURAL DESIGN:
WORK PERMIT : July 1977
FINAL RECEPTION : August 1978

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION:
PARTITIONS : Hollow bricks or concrete blocks

CONCRETE: R_{28} = 225 kg/cm^2 STEEL : A56-35H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS:

DATA SHEET NUMBER: 76

BUILDING: El Faro (Viña)
ADDRESS : Marino 70

NUMBER OF STORIES: 9 BASEMENTS: 1 HEIGHT: 23.9 m BUILDING AREA: 666 m^2

STRUCTURAL DESIGN:
WORK PERMIT :
FINAL RECEPTION : 1980

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION:
PARTITIONS : Brick pandereta

CONCRETE: R_{28} = kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS:

DATA SHEET NUMBER: 77

BUILDING: Arminsa
ADDRESS : Libertad 529

NUMBER OF STORIES: 9 BASEMENTS: HEIGHT: 23.7 m BUILDING AREA: 1,446 m^2

STRUCTURAL DESIGN:
WORK PERMIT : December 1974
FINAL RECEPTION : December 1979

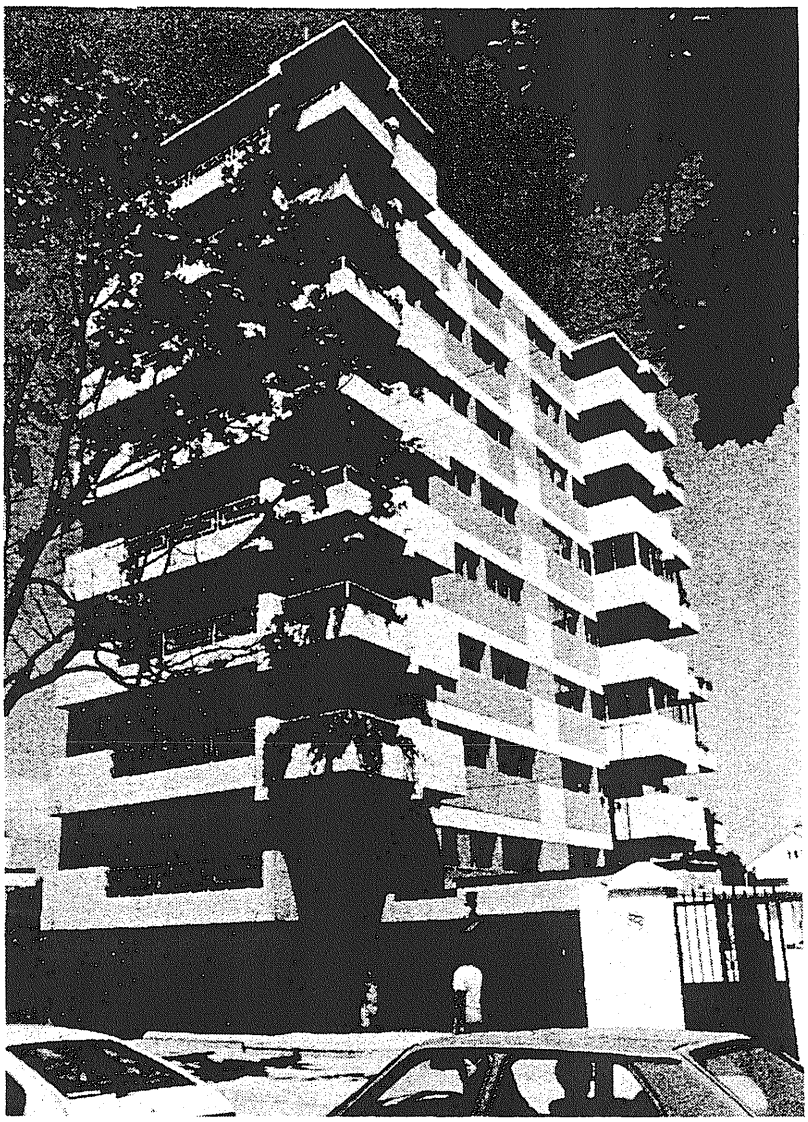
FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Continuous footing
PARTITIONS : Brick masonry

CONCRETE: R_{28} = 300 kg/cm^2 STEEL : A63-42H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS:



DATA SHEET NUMBER: 78

BUILDING: Pleno Mar
ADDRESS : Subida Condell 62

NUMBER OF STORIES: 9 BASEMENTS: HEIGHT: 23.5 m BUILDING AREA: 1,691 m^2

STRUCTURAL DESIGN: February 1980
WORK PERMIT : February 1981
FINAL RECEPTION :

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Continuous footing
PARTITIONS :

CONCRETE: R_{28} = 225 kg/cm^2 STEEL : A44-28H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS:

DATA SHEET NUMBER: 79

BUILDING: Dalcahue
ADDRESS : 8 1/2 Norte

NUMBER OF STORIES: 9 BASEMENTS: 1 HEIGHT: 23.5 m BUILDING AREA: 1,851 m^2

STRUCTURAL DESIGN: December 1980
WORK PERMIT : December 1980
FINAL RECEPTION : May 1984

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION:
PARTITIONS : Volcanita and brick pandereta

CONCRETE: R_{28} = 160 kg/cm^2 STEEL : A44-28H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE :	NO ___	LIGHT X	MODERATE ___	SEVERE ___
NONSTRUCTURAL DAMAGE:	NO ___	LIGHT X	MODERATE ___	SEVERE ___
COST OF REPAIR :	$ 94,800			

OBSERVATIONS: Reduction of area in 7th story.

DATA SHEET NUMBER: 80

BUILDING: Grand Prix
ADDRESS : 3 Norte 936

NUMBER OF STORIES: 9 BASEMENTS: 1 HEIGHT: 23.1 m BUILDING AREA: 1,931 m^2

STRUCTURAL DESIGN:
WORK PERMIT : November 1964
FINAL RECEPTION : August 1969

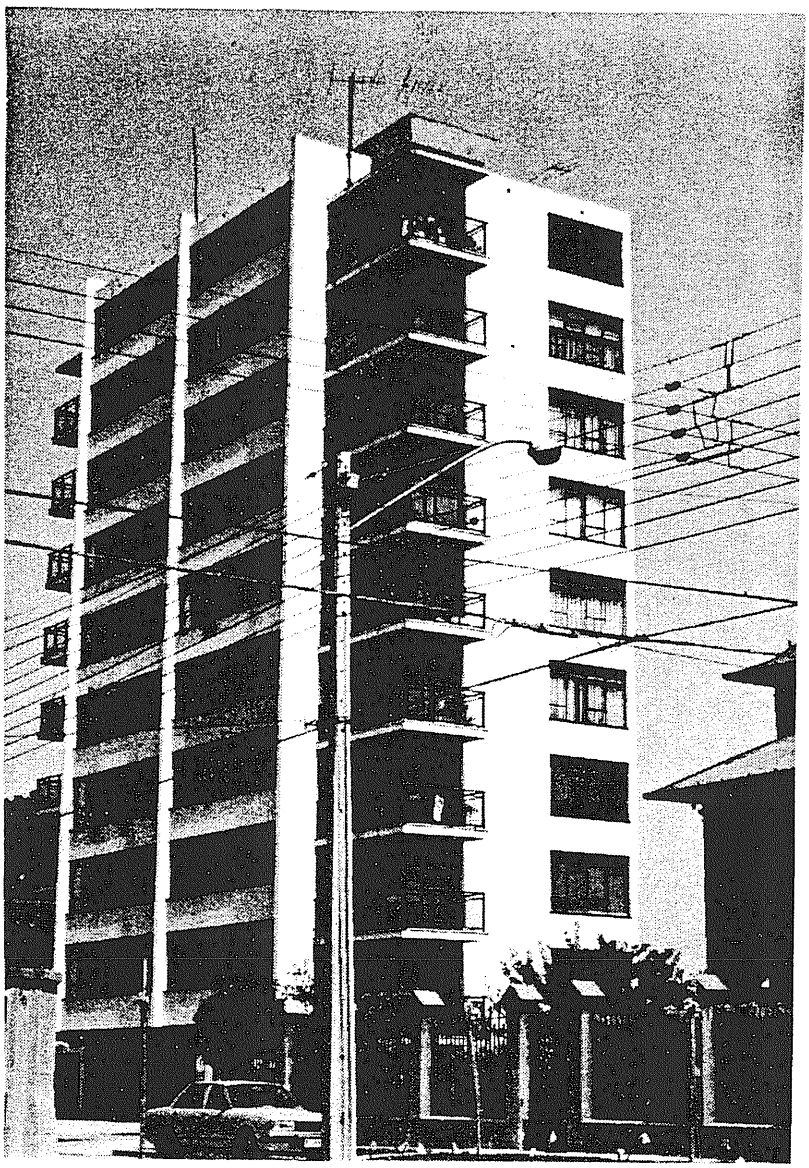
FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Mat foundation
PARTITIONS : Brick pandereta

CONCRETE: R_{28} = 225 kg/cm^2 STEEL : A56-35H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE :	NO	X	LIGHT	___	MODERATE	___	SEVERE ___
NONSTRUCTURAL DAMAGE:	NO	X	LIGHT	___	MODERATE	___	SEVERE ___
COST OF REPAIR :	$						

OBSERVATIONS: Irregular shape.



DATA SHEET NUMBER: 81

BUILDING: Banco de Credito e Inversiones
ADDRESS : Ecuador 1982

NUMBER OF STORIES: 8 BASEMENTS: 1 HEIGHT: 27.0 m BUILDING AREA: 2,278 m^2

STRUCTURAL DESIGN: July 1962
WORK PERMIT : 1962
FINAL RECEPTION : January 1965

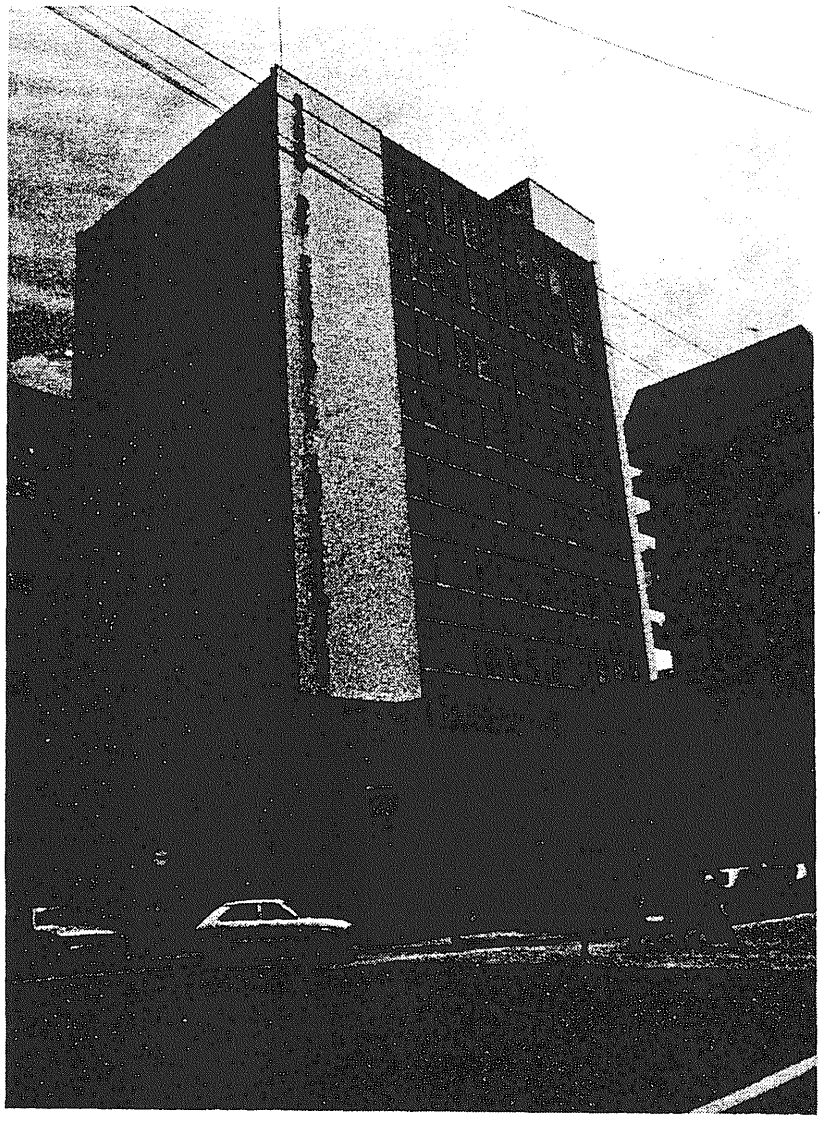
FRAMING SYSTEM : Structural walls and columns
TYPE OF FOUNDATION: Continuous footing
PARTITIONS : Hollow brick masonry

CONCRETE: R_{28} = 225 kg/cm^2 STEEL : A56-35H

ALLOWABLE SOIL PRESSURES STATIC: 1.2 kg/cm^2 DYNAMIC: 1.5 kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS: Commercial floor.



DATA SHEET NUMBER: 82

BUILDING: Dinamarca
ADDRESS : Valparaiso 483

NUMBER OF STORIES: 8 BASEMENTS: HEIGHT: 24.1 m BUILDING AREA: 1948 m^2

STRUCTURAL DESIGN:
WORK PERMIT : December 1968
FINAL RECEPTION :

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Continuous footings tied by beams
PARTITIONS :

CONCRETE: R_{28} = 225 kg/cm^2 STEEL : A56-35H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO ___ LIGHT X MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO ___ LIGHT X MODERATE ___ SEVERE ___
COST OF REPAIR : $ 150,000

OBSERVATIONS: Water tank

DATA SHEET NUMBER: 83

BUILDING: Crisol
ADDRESS : 3 Poniente 654

NUMBER OF STORIES: 8 BASEMENTS: 1 HEIGHT: 24 m BUILDING AREA: 3,150 m^2

STRUCTURAL DESIGN:
WORK PERMIT : February 1980
FINAL RECEPTION : August 1981

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION:
PARTITIONS : Brick pandereta

CONCRETE: R_{28} = 300 kg/cm^2 STEEL : A63-42H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $ 154,536

OBSERVATIONS:

DATA SHEET NUMBER: 84

BUILDING: Montecarlo - Blocks E,F
ADDRESS : 6 Norte 241-289

NUMBER OF STORIES: 8 BASEMENTS: 1 HEIGHT: 23.7 m BUILDING AREA: 5,120 m^2

STRUCTURAL DESIGN:
WORK PERMIT : August 1962
FINAL RECEPTION :

FRAMING SYSTEM : Reinforce concrete walls and brick walls
TYPE OF FOUNDATION: Continuous and isolated footings tied by beams
PARTITIONS : Concrete blocks

CONCRETE: R_{28} = 300 kg/cm^2 STEEL : A56-35H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO ___ LIGHT ___ MODERATE _X_ SEVERE ___
NONSTRUCTURAL DAMAGE: NO ___ LIGHT ___ MODERATE _X_ SEVERE ___
COST OF REPAIR : $ 5,837,035

OBSERVATIONS: Two independent structures of irregular shape.

DATA SHEET NUMBER: 85

BUILDING: Von Schroeders
ADDRESS : Corner of Alvarez and Von Schroeders

NUMBER OF STORIES: 8 BASEMENTS: 1 HEIGHT: 23.4 m BUILDING AREA: 2,997 m^2

STRUCTURAL DESIGN: December 1980
WORK PERMIT : February 1981
FINAL RECEPTION :

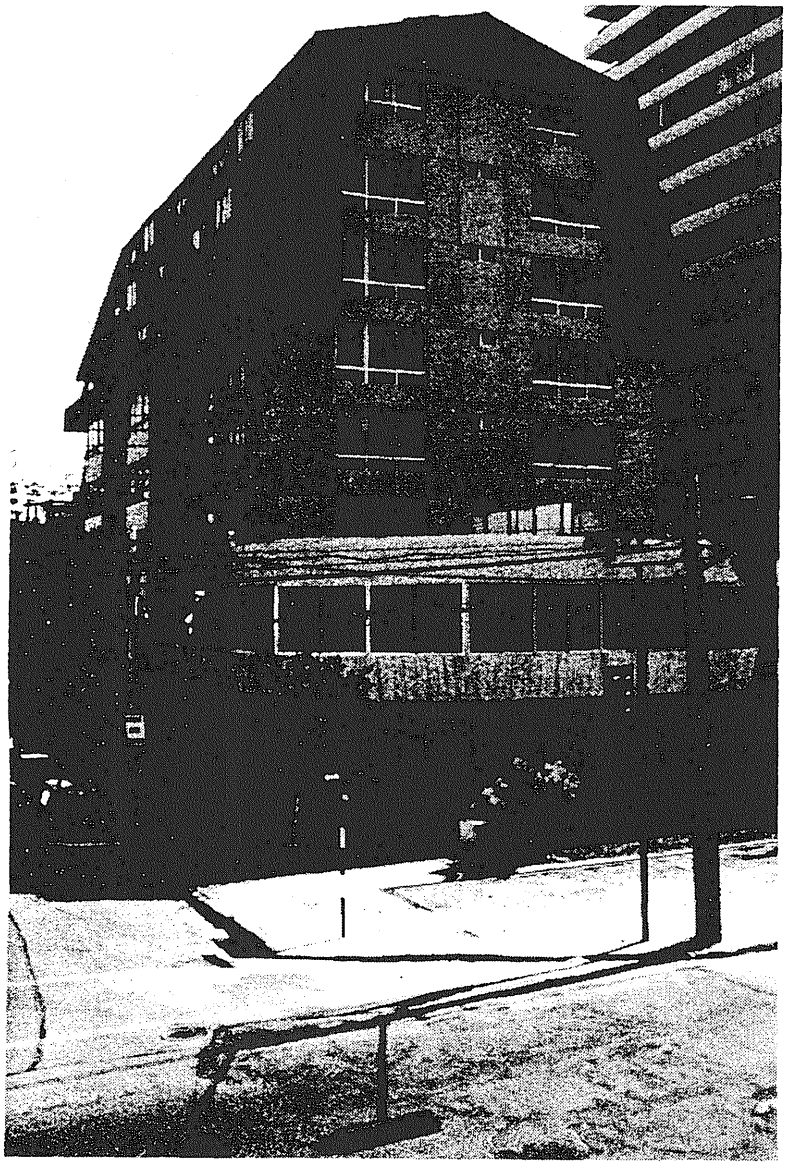
FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION:
PARTITIONS : Volcanita and bepolit

CONCRETE: R_{28} = kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS:



DATA SHEET NUMBER: 86

BUILDING: Rotonda
ADDRESS : San Martin 160-172

NUMBER OF STORIES: 8 BASEMENTS: 1 HEIGHT: 22.5 m BUILDING AREA: 4,142 m^2

STRUCTURAL DESIGN:
WORK PERMIT : August 1962
FINAL RECEPTION : May 1966

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Continuous footing
PARTITIONS : Eraclit panels

CONCRETE: R_{28} = 225 kg/cm^2 STEEL : A56-35H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE :	NO X	LIGHT ___	MODERATE ___	SEVERE ___
NONSTRUCTURAL DAMAGE:	NO ___	LIGHT X	MODERATE ___	SEVERE ___
COST OF REPAIR :	$ 54,768			

OBSERVATIONS: There are two identical buildings.

DATA SHEET NUMBER: 87

BUILDING: Costa Azul
ADDRESS : Murphy 321 (Cerro Castillo)

NUMBER OF STORIES: 8 BASEMENTS: 2 HEIGHT: 22.4 m BUILDING AREA: 11,634 m^2

STRUCTURAL DESIGN: August 1959
WORK PERMIT : 1959
FINAL RECEPTION : May 1962

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Continuous footing and isolated footings
PARTITIONS :

CONCRETE: R_{28} = 225 kg/cm^2 STEEL : Twisted

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS:

DATA SHEET NUMBER: 88

BUILDING: Achao
ADDRESS : 8 Norte (between 3 Poniente and San Martin)

NUMBER OF STORIES: 8 BASEMENTS: 1 HEIGHT: 22 m BUILDING AREA: 1,752 m^2

STRUCTURAL DESIGN:
WORK PERMIT : July 1981
FINAL RECEPTION : January 1983

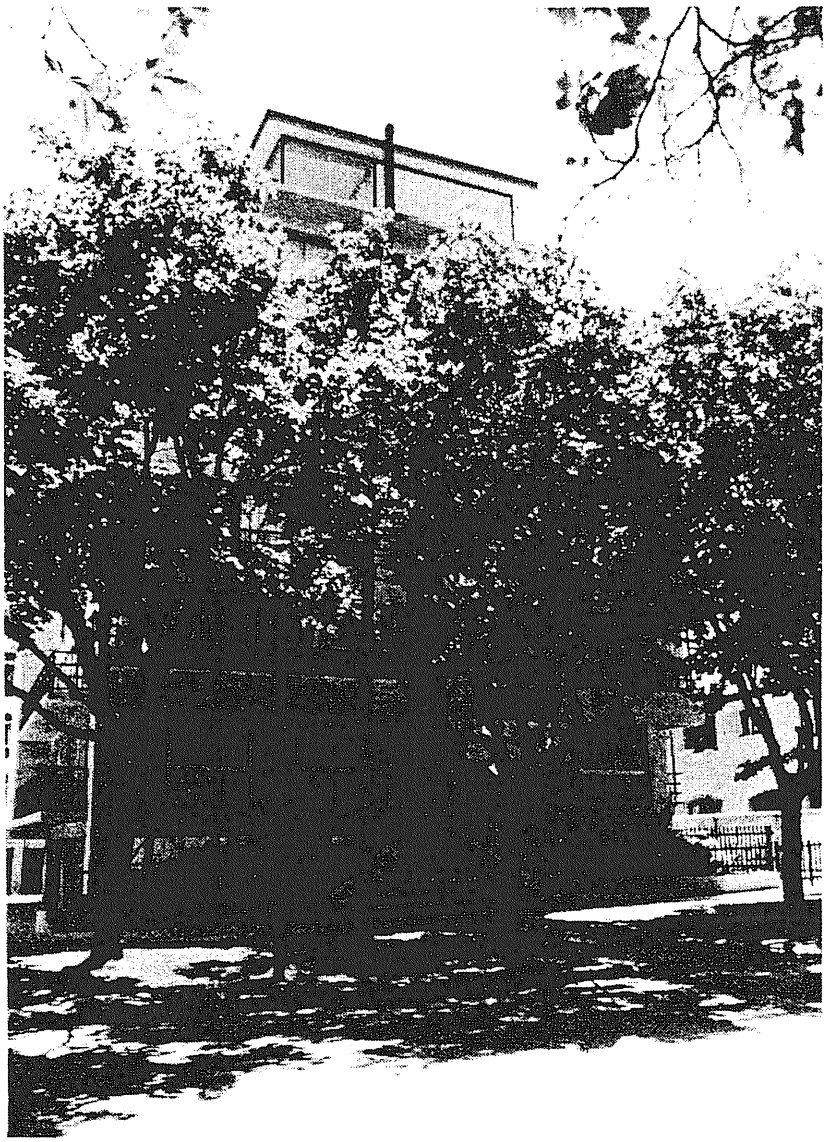
FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION:
PARTITIONS : Brick pandereta

CONCRETE: R_{28} = 180 kg/cm^2 STEEL : A44-28H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE :	NO X	LIGHT ___	MODERATE ___	SEVERE ___
NONSTRUCTURAL DAMAGE:	NO X	LIGHT ___	MODERATE ___	SEVERE ___
COST OF REPAIR :	$			

OBSERVATIONS: There is discontinuity in plan.



DATA SHEET NUMBER: 89

BUILDING: Cori
ADDRESS : Diego Portales 916

NUMBER OF STORIES: 8 BASEMENTS: HEIGHT: 21.7 m BUILDING AREA: 1,533 m^2

STRUCTURAL DESIGN:
WORK PERMIT : April 1964
FINAL RECEPTION : May 1967

FRAMING SYSTEM : Reinforced concrete walls and masonry walls
TYPE OF FOUNDATION: Continuous footing
PARTITIONS : Concrete blocks and wood frames

CONCRETE: R_{28} = kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS:

DATA SHEET NUMBER: 90

BUILDING: El Marques
ADDRESS : 8 Norte 779

NUMBER OF STORIES: 8 BASEMENTS: 1 HEIGHT: 21.6 m BUILDING AREA: 2,037 m^2

STRUCTURAL DESIGN:
WORK PERMIT : January 1980
FINAL RECEPTION :

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION:
PARTITIONS : Brick pandereta

CONCRETE: R_{28} = 300 kg/cm^2 STEEL : A63-42H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO ___ LIGHT X MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO ___ LIGHT ___ MODERATE X SEVERE ___
COST OF REPAIR : $ 2,718,538

OBSERVATIONS:

DATA SHEET NUMBER: 91

BUILDING: Capri
ADDRESS : San Martin 563

NUMBER OF STORIES: 8 BASEMENTS: HEIGHT: 21.5 m BUILDING AREA: 1,227 m^2

STRUCTURAL DESIGN:
WORK PERMIT : 1961
FINAL RECEPTION : March 1963

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Isolated footings tied to mat foundation with beams
PARTITIONS : Hollow brick

CONCRETE: R_{28} = 180 kg/cm^2 STEEL : A37-24

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS:

DATA SHEET NUMBER: 92

BUILDING: Población Lord Cochrane - Block C
ADDRESS : Calle Sin Salida 1450

NUMBER OF STORIES: 8 BASEMENTS: HEIGHT: 20.8 m BUILDING AREA: 2,920 m^2

STRUCTURAL DESIGN:
WORK PERMIT : 1963
FINAL RECEPTION : August 1964

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Continuous footings and some isolated footings tied by beams
PARTITIONS : Brick and lightweight panels

CONCRETE: R_{28} = 225 kg/cm^2 STEEL : A56-35H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE :	NO	X	LIGHT	___	MODERATE ___	SEVERE	___
NONSTRUCTURAL DAMAGE:	NO	X	LIGHT	___	MODERATE ___	SEVERE	___
COST OF REPAIR :	$						

OBSERVATIONS: Built in Sector B.

DATA SHEET NUMBER: 93

BUILDING: Población Lord Cochrane - Block C
ADDRESS : Calle Sin Salida 1450

NUMBER OF STORIES: 8 BASEMENTS: HEIGHT: 20.8 m BUILDING AREA: 3,040 m^2

STRUCTURAL DESIGN:
WORK PERMIT : 1963
FINAL RECEPTION : August 1964

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Continuous footings and some isolated footings tied beams
PARTITIONS : Brick and lightweight panels

CONCRETE: R_{28} = 225 kg/cm^2 STEEL : A56-35H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE :	NO	X	LIGHT	___	MODERATE	___	SEVERE ___
NONSTRUCTURAL DAMAGE:	NO	X	LIGHT	___	MODERATE	___	SEVERE ___
COST OF REPAIR :	$						

OBSERVATIONS: There are two identical structures. Built in Sectors A and D.

DATA SHEET NUMBER: 94

BUILDING: Población Lord Cochrane - Block A
ADDRESS : Barros Arana 715-729-757-795

NUMBER OF STORIES: 8 BASEMENTS: HEIGHT: 20.8 m BUILDING AREA: m^2

STRUCTURAL DESIGN:
WORK PERMIT : September 1963
FINAL RECEPTION : September 1964

FRAMING SYSTEM :
TYPE OF FOUNDATION:
PARTITIONS : Brick and lightweight panels

CONCRETE: R_{28} = 225 kg/cm^2 STEEL : A56-35H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS: Four identical buildings.

DATA SHEET NUMBER: 95

BUILDING: Población Lord Cochrane - Block C
ADDRESS : Calle Sin Salida 1450

NUMBER OF STORIES: 8 BASEMENTS: HEIGHT: 20.8 m BUILDING AREA: 2,948 m^2

STRUCTURAL DESIGN: 1963
WORK PERMIT : 1963
FINAL RECEPTION : August 1964

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Continuous footing and some isolated footings
PARTITIONS : Brick and lightweight panels

CONCRETE: R_{28} = 225 kg/cm^2 STEEL : A56-35H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS: Built in sector C.

DATA SHEET NUMBER: 96

BUILDING: Hotel San Martin
ADDRESS : San Martin 621

NUMBER OF STORIES: 7 BASEMENTS: 1 HEIGHT: 25.0 m BUILDING AREA: 7,364 m^2

STRUCTURAL DESIGN: April 1956
WORK PERMIT : March 1956
FINAL RECEPTION :

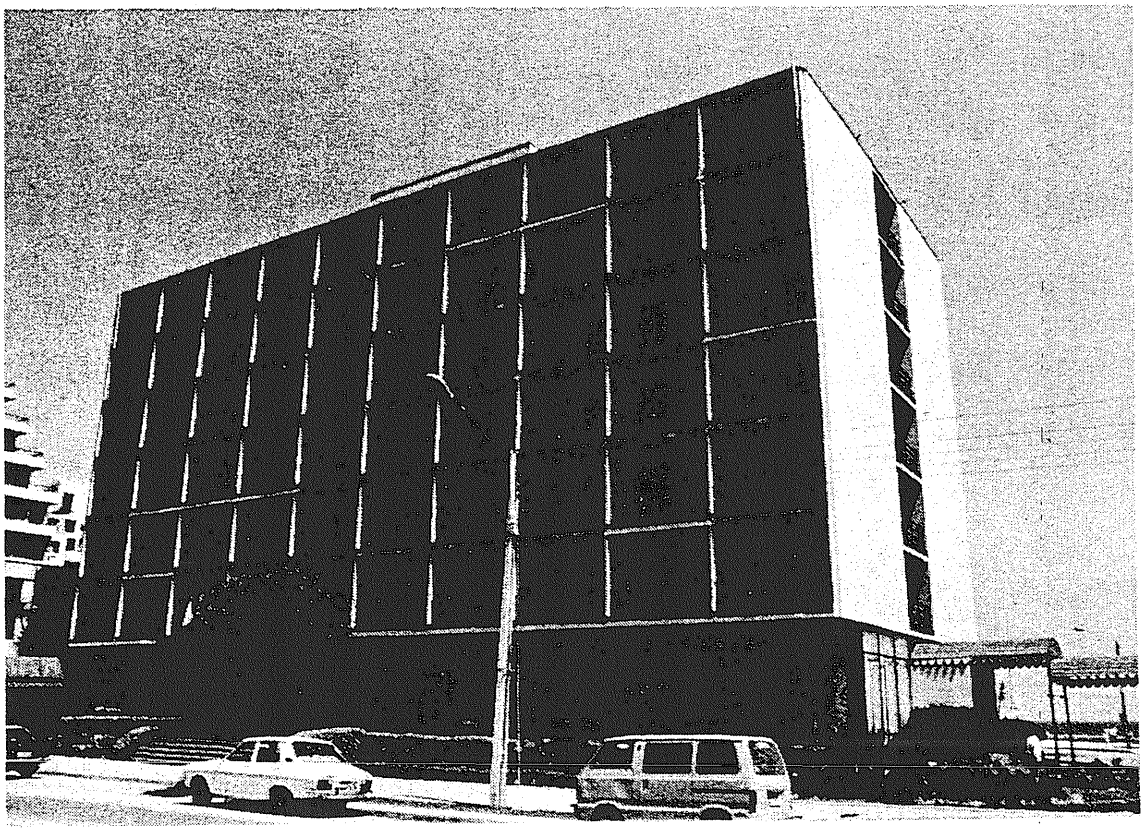
FRAMING SYSTEM :
TYPE OF FOUNDATION: Mat foundation
PARTITIONS : Brick and concrete block masonry

CONCRETE: R_{28} = kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS:



DATA SHEET NUMBER: 97

BUILDING: Marrachini
ADDRESS : Corner of 6 Poniente 372 and 5 Norte

NUMBER OF STORIES: 7 BASEMENTS: HEIGHT: 23.5 m BUILDING AREA: 1,432 m^2

STRUCTURAL DESIGN: December 1959
WORK PERMIT : December 1959
FINAL RECEPTION : December 1961

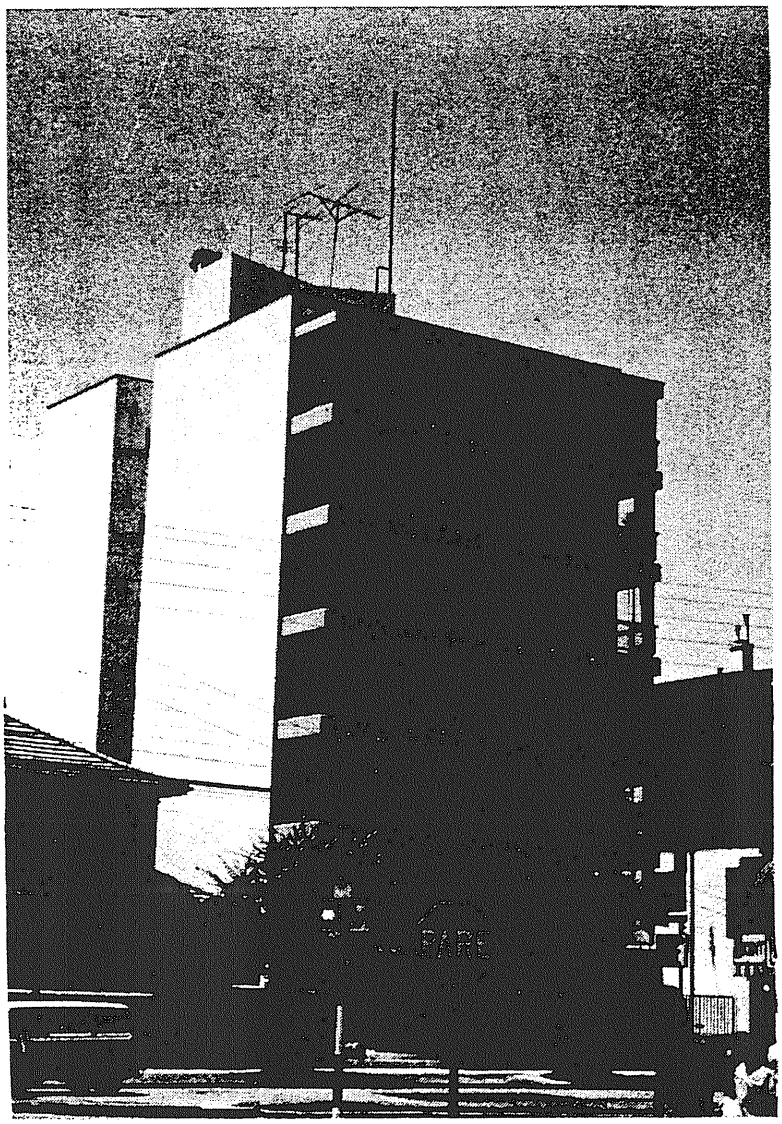
FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION:
PARTITIONS : Brick masonry

CONCRETE: R_{28} = kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS:



DATA SHEET NUMBER: 98

BUILDING: Alvarez
ADDRESS : Alvarez 660

NUMBER OF STORIES: 7 BASEMENTS: 1 HEIGHT: 22.5 m BUILDING AREA: 1,847 m^2

STRUCTURAL DESIGN:
WORK PERMIT : 1949
FINAL RECEPTION : 1952

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION:
PARTITIONS : Brick pandereta

CONCRETE: R_{28} = kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO ___ LIGHT X MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO ___ LIGHT ___ MODERATE X SEVERE ___
COST OF REPAIR : $

OBSERVATIONS:

DATA SHEET NUMBER: 99

BUILDING: El Cipres
ADDRESS : 5 Norte 560

NUMBER OF STORIES: 7 BASEMENTS: HEIGHT: 22.4 m BUILDING AREA: 1,256 m^2

STRUCTURAL DESIGN:
WORK PERMIT : February 1981
FINAL RECEPTION : April 1982

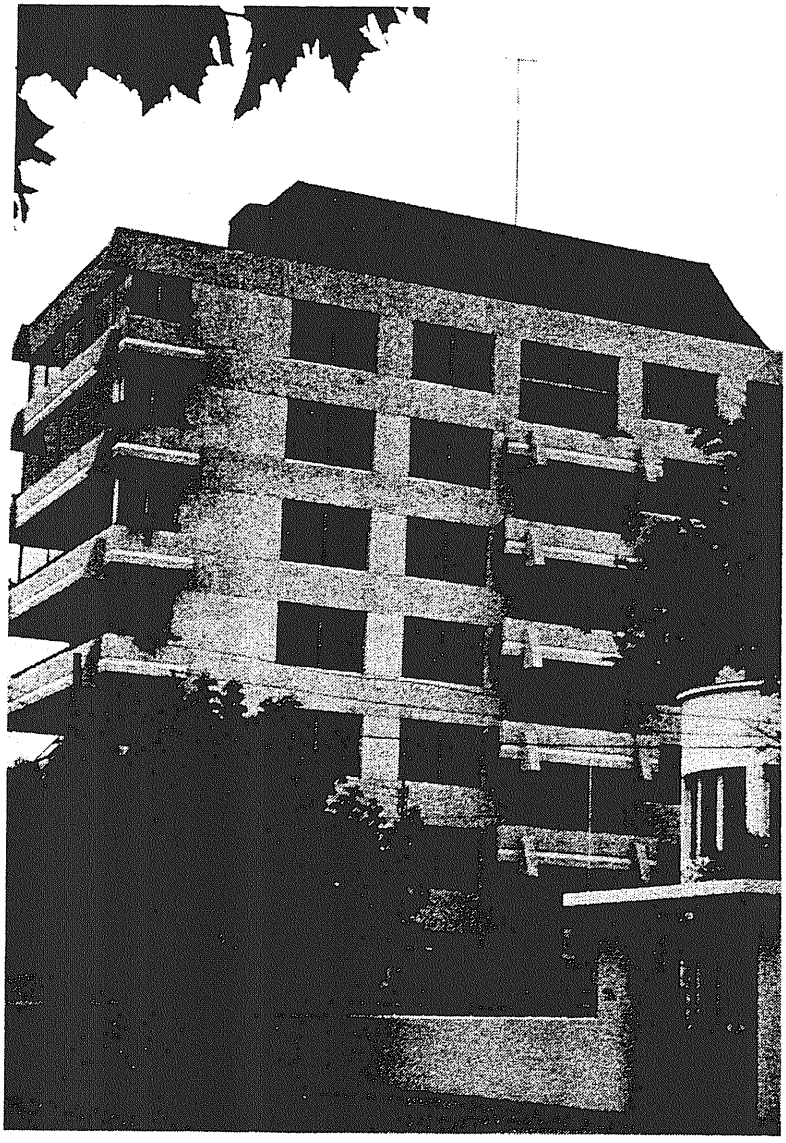
FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION:
PARTITIONS : Wood panels, asbestos-cement, and termofor

CONCRETE: R_{28} = kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS:



DATA SHEET NUMBER: 100

BUILDING: Couve
ADDRESS : Plaza Sucre 220

NUMBER OF STORIES: 7 BASEMENTS: 1 HEIGHT: 21.1 m BUILDING AREA: 11,866 m^2

STRUCTURAL DESIGN:
WORK PERMIT : 1950
FINAL RECEPTION :

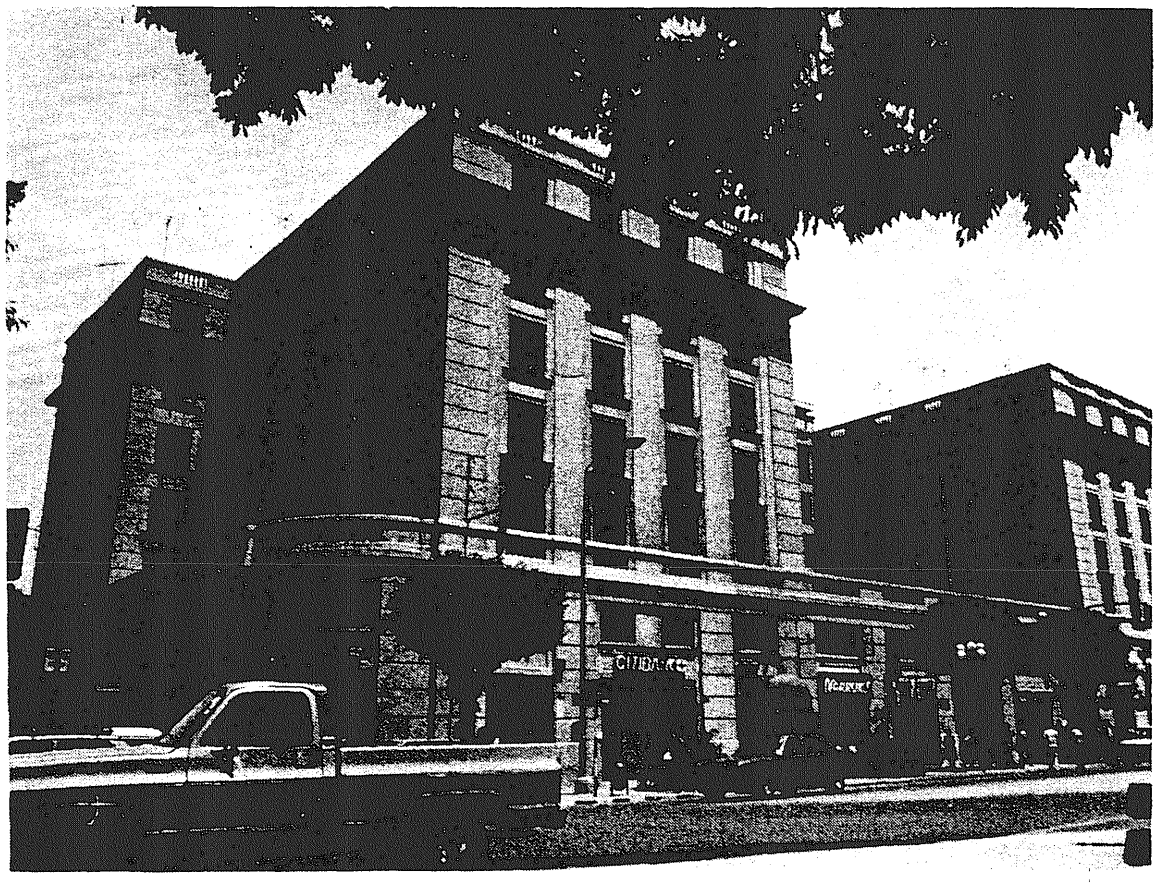
FRAMING SYSTEM :
TYPE OF FOUNDATION: Mat foundation
PARTITIONS : Brick masonry and pandereta

CONCRETE: R_{28} = kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS: Mechanical room



DATA SHEET NUMBER: 101

BUILDING: Viña Rio
ADDRESS : 3 Norte 834

NUMBER OF STORIES: 7 BASEMENTS: 1 HEIGHT: 21.1 m BUILDING AREA: 1,455 m^2

STRUCTURAL DESIGN: February 1980
WORK PERMIT : October 1980
FINAL RECEPTION : June 1981

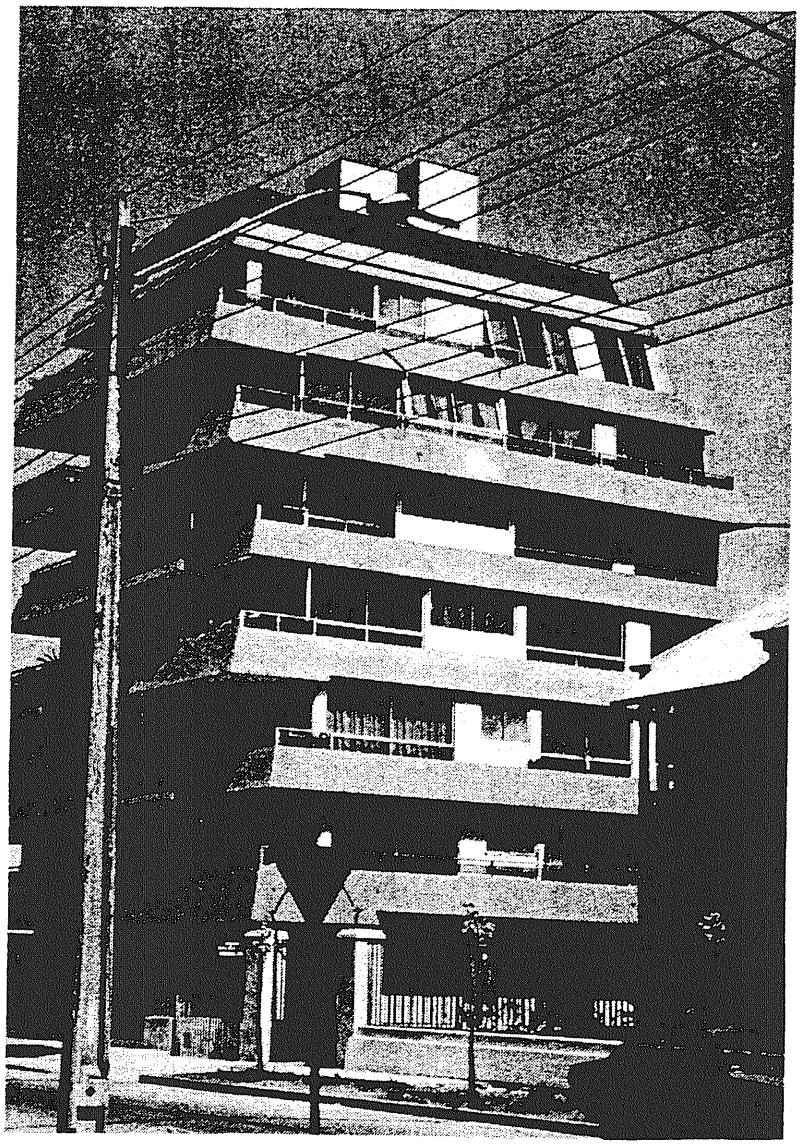
FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION:
PARTITIONS : Brick pandereta

CONCRETE: R_{28} = 225 kg/cm^2 STEEL : A44-28H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE :	NO	X	LIGHT	___	MODERATE	___	SEVERE ___
NONSTRUCTURAL DAMAGE:	NO	___	LIGHT	X	MODERATE	___	SEVERE ___
COST OF REPAIR :	$						

OBSERVATIONS: Plan dimension reduced with height.



DATA SHEET NUMBER: 102

BUILDING: Verona
ADDRESS : San Martin 734

NUMBER OF STORIES: 7 BASEMENTS: 1 HEIGHT: 20.2 m BUILDING AREA: m^2

STRUCTURAL DESIGN:
WORK PERMIT : December 1968
FINAL RECEPTION :

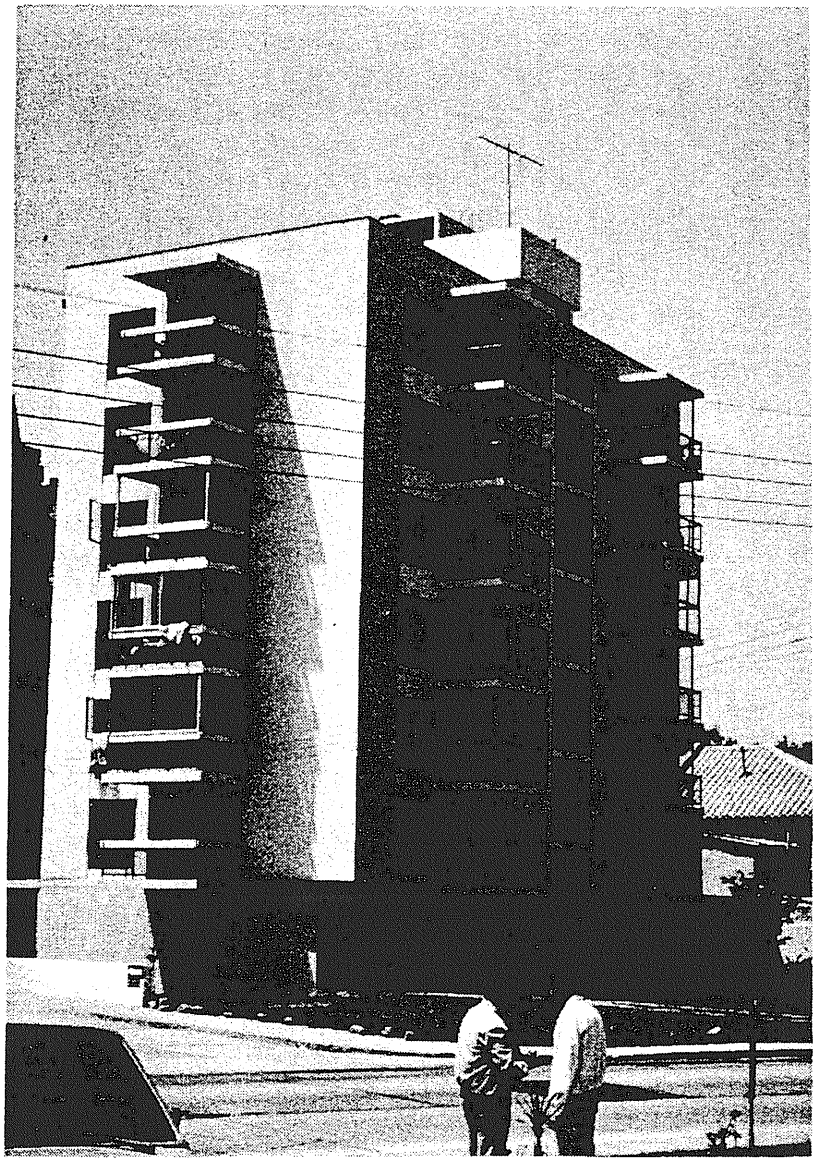
FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION:
PARTITIONS : Brick masonry

CONCRETE: R_{28} = kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO ___ LIGHT ___ MODERATE X SEVERE ___
NONSTRUCTURAL DAMAGE: NO ___ LIGHT ___ MODERATE X SEVERE ___
COST OF REPAIR : $ 1,143,660

OBSERVATIONS:



DATA SHEET NUMBER: 103

BUILDING: Sotavento
ADDRESS : Amunategui 1585

NUMBER OF STORIES: 7 BASEMENTS: 1 HEIGHT: 20 m BUILDING AREA: 1,489 m^2

STRUCTURAL DESIGN:
WORK PERMIT : July 1979
FINAL RECEPTION : 1984

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Apparently foundation walls
PARTITIONS : Wood panels

CONCRETE: R_{28} = 225 kg/cm^2 STEEL : A56-34H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE :	NO	X	LIGHT	___	MODERATE	___	SEVERE ___
NONSTRUCTURAL DAMAGE:	NO	X	LIGHT	___	MODERATE	___	SEVERE ___
COST OF REPAIR :	$						

OBSERVATIONS: Foundation: R_{28}=180, slabs and beams: R_{28}=300.

DATA SHEET NUMBER: 104

BUILDING: Las Brisas
ADDRESS : 6 Norte 24

NUMBER OF STORIES: 7 BASEMENTS: 1 HEIGHT: 20.0 m BUILDING AREA: 6,495 m^2

STRUCTURAL DESIGN:
WORK PERMIT : 1953
FINAL RECEPTION :

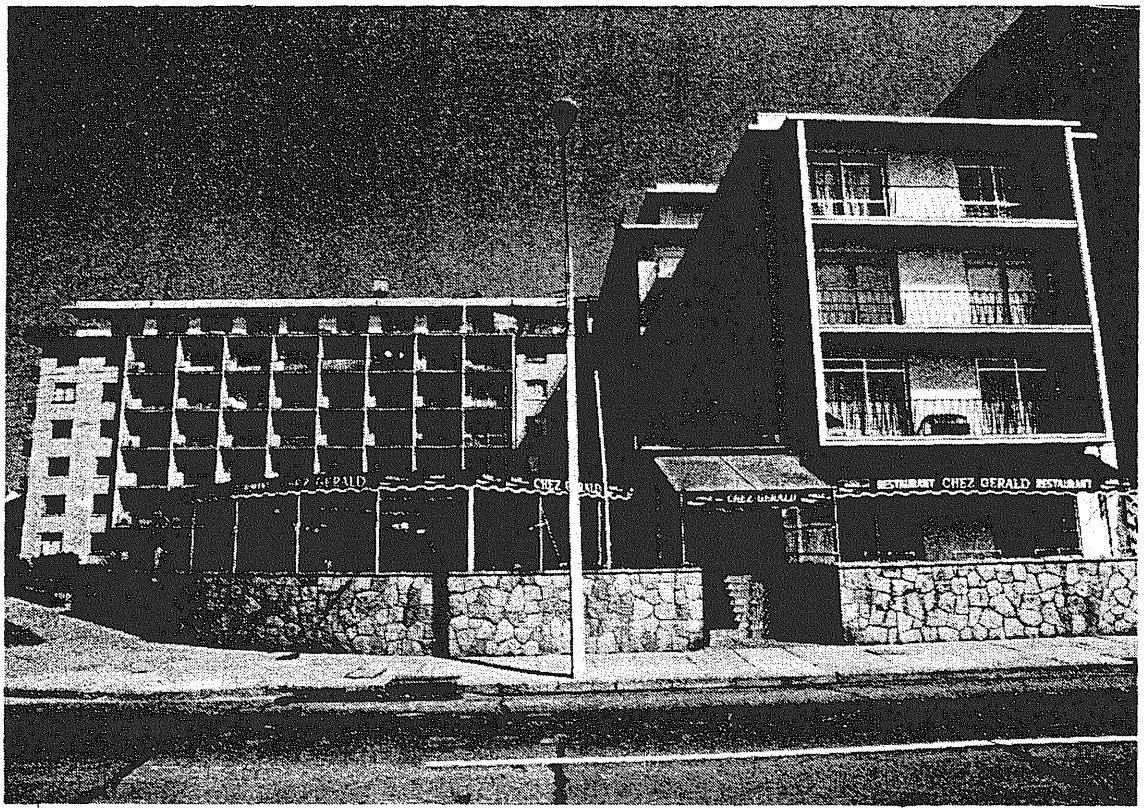
FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Mat foundation
PARTITIONS : Hollow brick

CONCRETE: R_{28} = 220 kg/cm^2 STEEL : f_u = 3700 kg/cm^2

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS:



DATA SHEET NUMBER: 105

BUILDING: Las Torcazas
ADDRESS : Alvarez 1214

NUMBER OF STORIES: 7 BASEMENTS: 1 HEIGHT: 20.0 m BUILDING AREA: 2,221 m^2

STRUCTURAL DESIGN:
WORK PERMIT : March 1981
FINAL RECEPTION : April 1983

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION:
PARTITIONS : Brick pandereta and masonry

CONCRETE: R_{28} = 300 kg/cm^2 STEEL : A63-42H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE :	NO X	LIGHT ___	MODERATE ___	SEVERE ___
NONSTRUCTURAL DAMAGE:	NO X	LIGHT ___	MODERATE ___	SEVERE ___
COST OF REPAIR :	$			

OBSERVATIONS:

DATA SHEET NUMBER: 106

BUILDING: Niza
ADDRESS : 6 Poniente 220

NUMBER OF STORIES: 7 BASEMENTS: HEIGHT: 19.7 m BUILDING AREA: 1,059 m^2

STRUCTURAL DESIGN: September 1960
WORK PERMIT : 1960
FINAL RECEPTION : December 1961

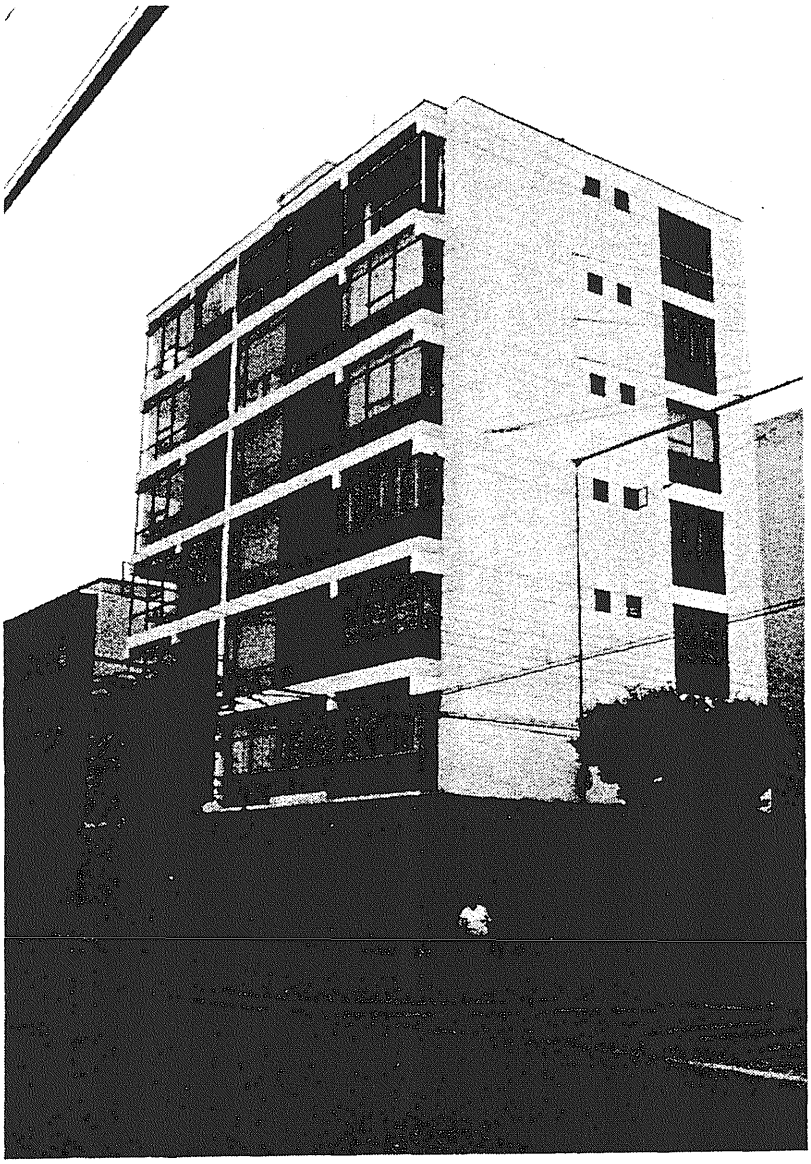
FRAMING SYSTEM : Reinforced concrete and some masonry walls
TYPE OF FOUNDATION: Continuous footing
PARTITIONS : Hollow brick

CONCRETE: R_{28} = kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS:



DATA SHEET NUMBER: 107

BUILDING: Florida
ADDRESS : 8 Norte 250

NUMBER OF STORIES: 7 BASEMENTS: 1 HEIGHT: 19.5 m BUILDING AREA: 1,776 m^2

STRUCTURAL DESIGN:
WORK PERMIT : December 1962
FINAL RECEPTION : February 1965

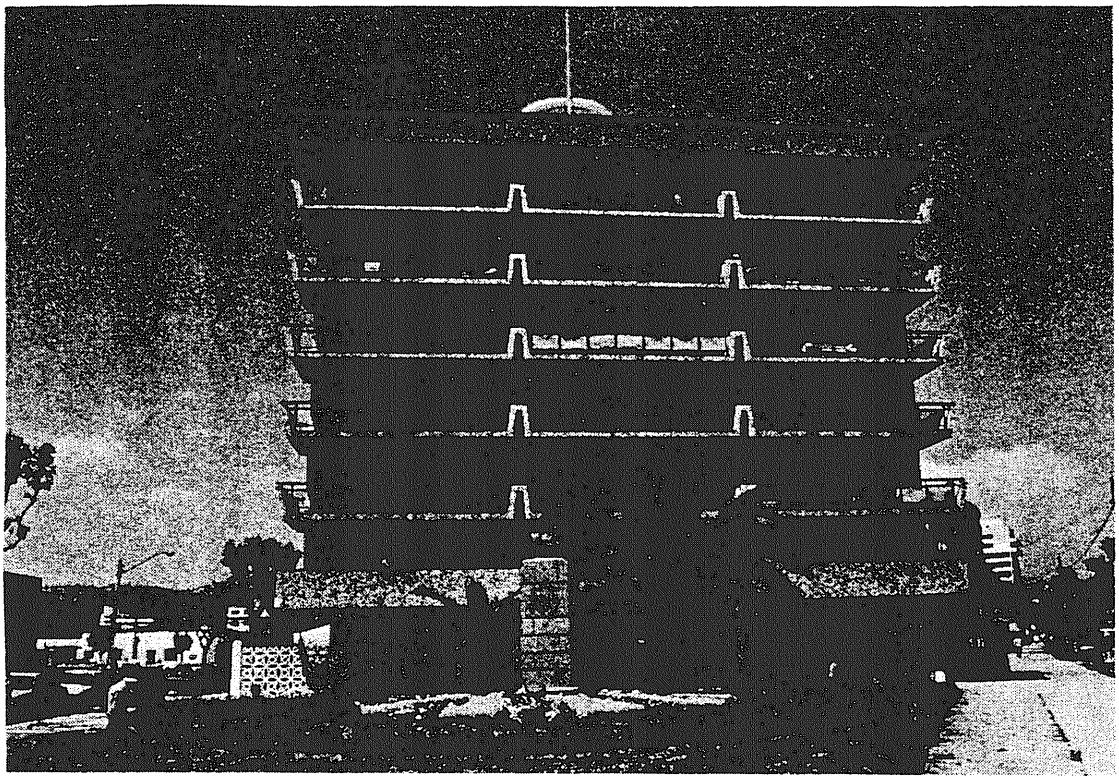
FRAMING SYSTEM : Walls (brick walls in 7th floor)
TYPE OF FOUNDATION:
PARTITIONS : Brick masonry

CONCRETE: R_{28} = 300 kg/cm^2 STEEL : A56

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE :	NO ___	LIGHT X	MODERATE ___	SEVERE ___
NONSTRUCTURAL DAMAGE:	NO ___	LIGHT ___	MODERATE X	SEVERE ___
COST OF REPAIR :	$ 2,083,841			

OBSERVATIONS: Store rooms above 7th floor.



DATA SHEET NUMBER: 108

BUILDING: Conjunto Habilacional Limache
ADDRESS : Limache 1967

NUMBER OF STORIES: 7 BASEMENTS: 1 HEIGHT: 19.5 m BUILDING AREA: 1,903 m^2

STRUCTURAL DESIGN: October 1980
WORK PERMIT : 1981
FINAL RECEPTION : February 1982

FRAMING SYSTEM : Central walls and outside frames
TYPE OF FOUNDATION: Continuous and isolated footings tied by beams
PARTITIONS : Volcanita, asbestos cement, and brick

CONCRETE: R_{28} = 300 kg/cm^2 STEEL : A63-42H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS: There are two identical buildings.

DATA SHEET NUMBER: 109

BUILDING: Bonanza
ADDRESS : 3 Norte 580

NUMBER OF STORIES: 7 BASEMENTS: 1 HEIGHT: 19.4 m BUILDING AREA: 2,807 m^2

STRUCTURAL DESIGN:
WORK PERMIT : May 1979
FINAL RECEPTION : November 1980

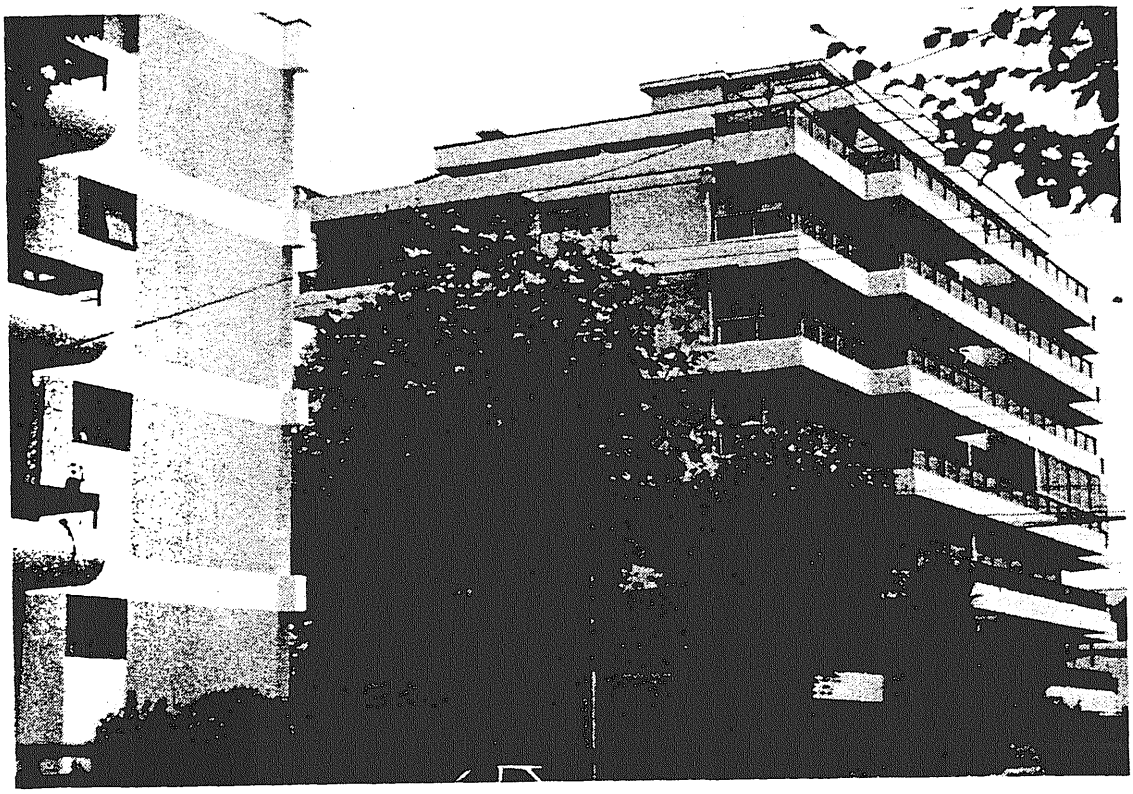
FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Continuous footing
PARTITIONS : Brick pandereta

CONCRETE: R_{28} = 300 kg/cm^2 STEEL : A63-42H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS:



DATA SHEET NUMBER: 110

BUILDING: Andes
ADDRESS : Valparaiso 122

NUMBER OF STORIES: 7 BASEMENTS: HEIGHT: 19.4 m BUILDING AREA: 1,474 m^2

STRUCTURAL DESIGN:
WORK PERMIT : 1959
FINAL RECEPTION : December 1961

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Continuous and some isolated footings
PARTITIONS : Brick masonry

CONCRETE: R_{28} = kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: 1.5 kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE :	NO	X	LIGHT	___	MODERATE	___	SEVERE ___
NONSTRUCTURAL DAMAGE:	NO	X	LIGHT	___	MODERATE	___	SEVERE ___

COST OF REPAIR : $ 40,000

OBSERVATIONS:

DATA SHEET NUMBER: 111

BUILDING: Arrecifes
ADDRESS : 2 Poniente 510

NUMBER OF STORIES: 7 BASEMENTS: HEIGHT: 19.1 m BUILDING AREA: 937 m^2

STRUCTURAL DESIGN:
WORK PERMIT :
FINAL RECEPTION :

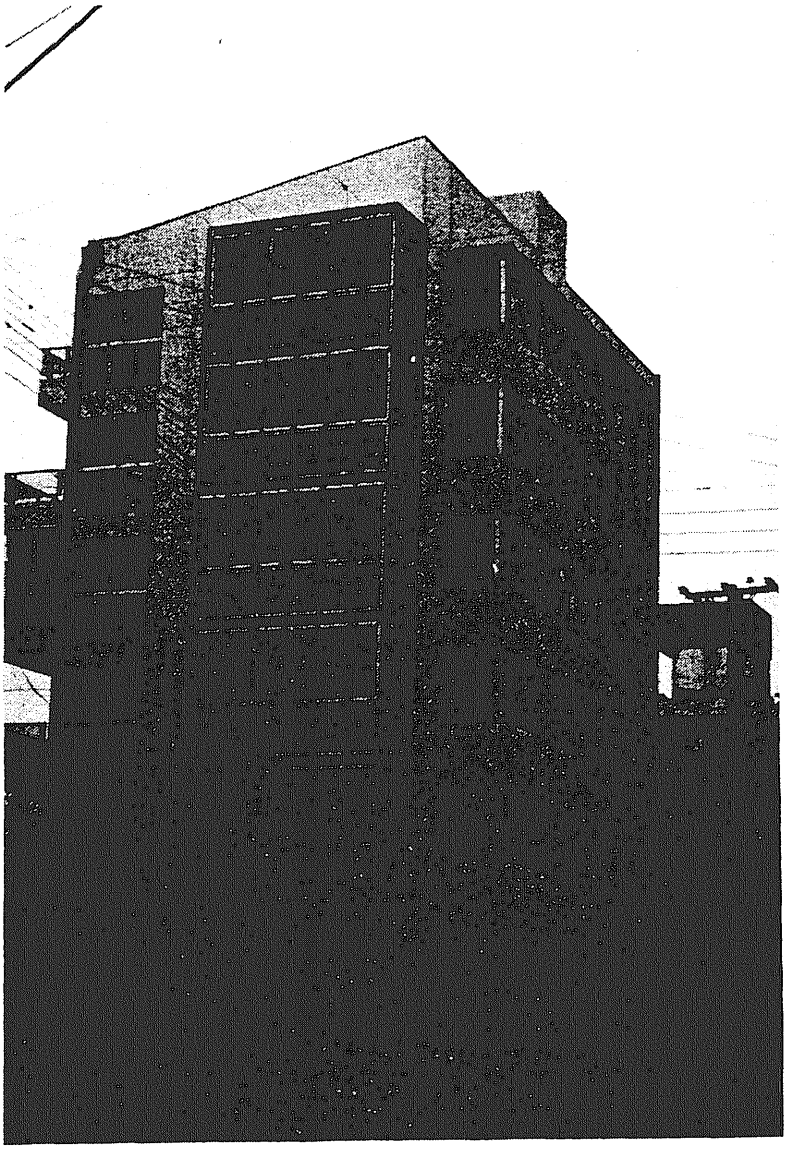
FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Continuous footing
PARTITIONS : Brick pandereta

CONCRETE: R_{28} = kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS:



DATA SHEET NUMBER: 112

BUILDING: Iscavas
ADDRESS : Villanelo 183

NUMBER OF STORIES: 7 BASEMENTS: HEIGHT: 18.9 m BUILDING AREA: 2,760 m^2

STRUCTURAL DESIGN:
WORK PERMIT : July 1976
FINAL RECEPTION :

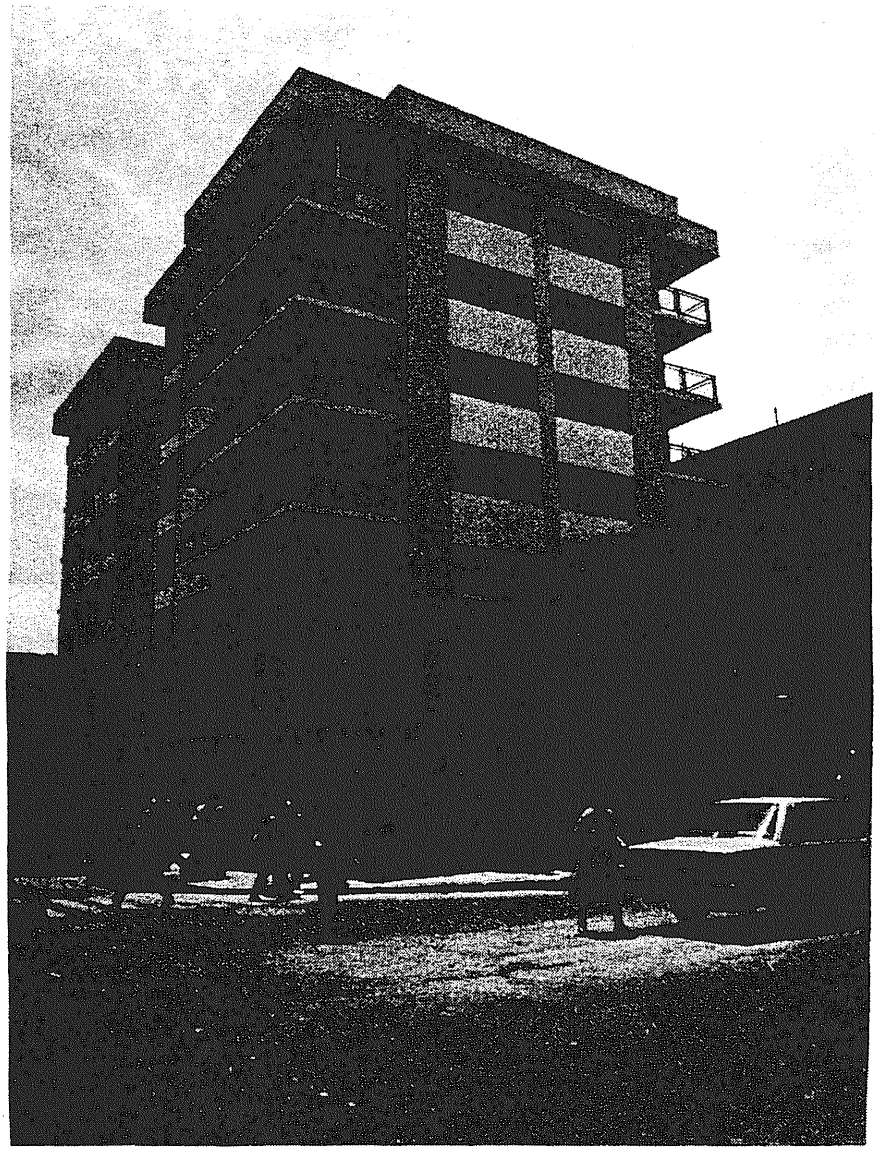
FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION:
PARTITIONS : Termofor panels (2 inches thick)

CONCRETE: R_{28} = 300 kg/cm^2 STEEL : A63-42H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS: Commercial plaza.



DATA SHEET NUMBER: 113

BUILDING: Gellona
ADDRESS : Marina 66

NUMBER OF STORIES: 7 BASEMENTS: HEIGHT: 18.9 m BUILDING AREA: 2,010 m^2

STRUCTURAL DESIGN:
WORK PERMIT :
FINAL RECEPTION : 1965

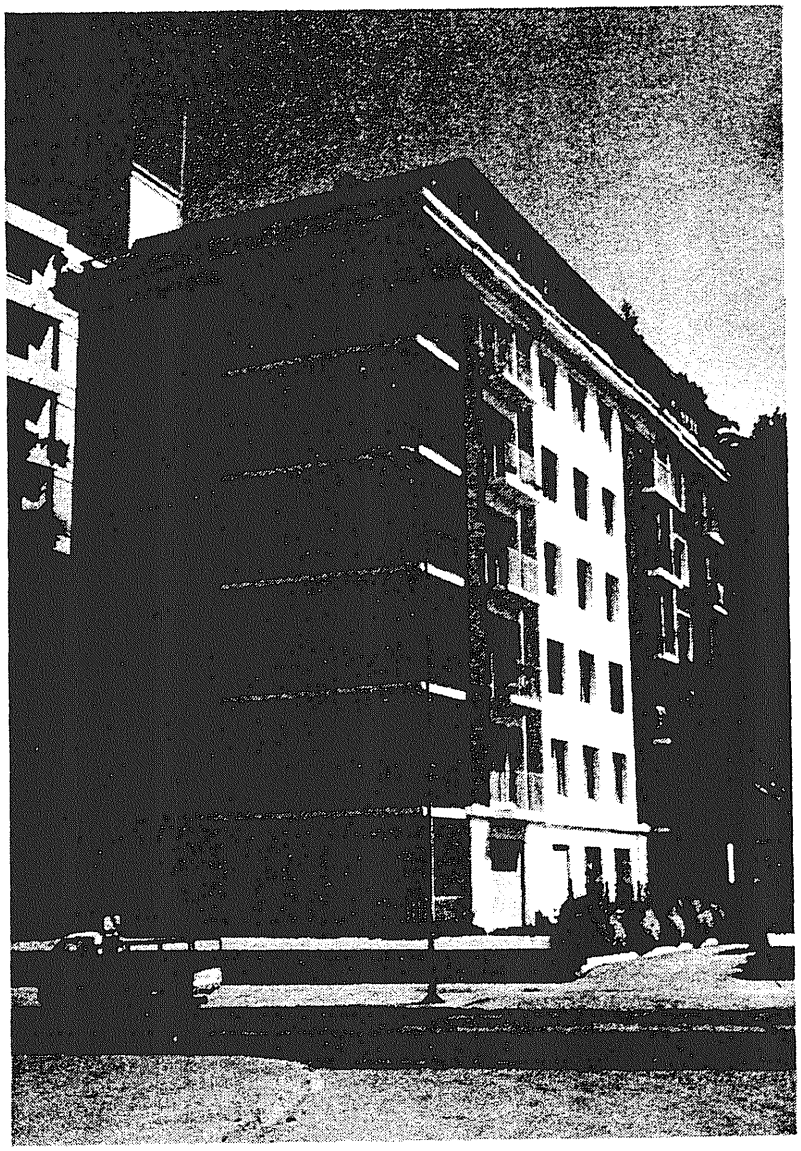
FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION:
PARTITIONS : Hollow blocks

CONCRETE: R_{28} = kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS:



DATA SHEET NUMBER: 114

BUILDING: Fenix
ADDRESS : Libertad 733

NUMBER OF STORIES: 7 BASEMENTS: 1 HEIGHT: 18.9 m BUILDING AREA: 888 m^2

STRUCTURAL DESIGN: October 1980
WORK PERMIT : February 1981
FINAL RECEPTION : October 1982

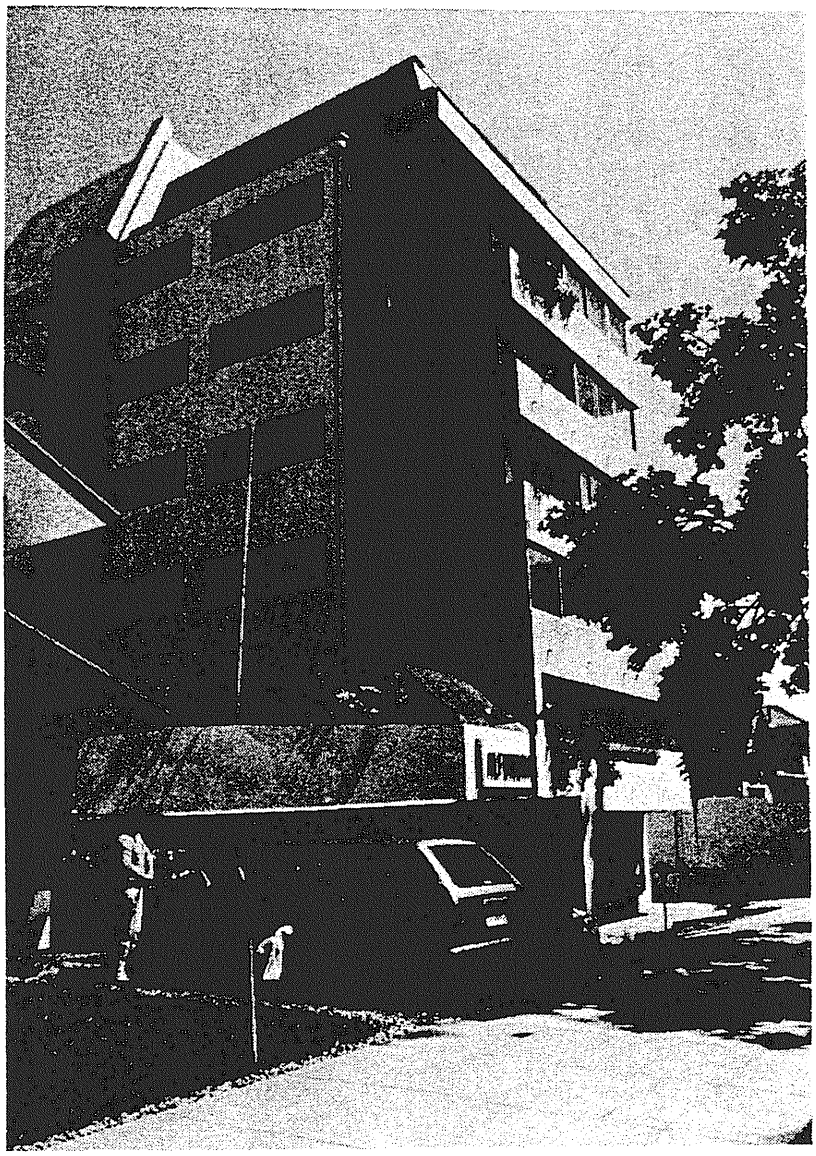
FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Continuous footing
PARTITIONS : Brick pandereta

CONCRETE: R_{28} = 225 kg/cm^2 STEEL : A63-42H

ALLOWABLE SOIL PRESSURES STATIC: 2 kg/cm^2 DYNAMIC: 3 kg/cm^2

STRUCTURAL DAMAGE :	NO X	LIGHT ___	MODERATE ___	SEVERE ___
NONSTRUCTURAL DAMAGE:	NO X	LIGHT ___	MODERATE ___	SEVERE ___
COST OF REPAIR :	$			

OBSERVATIONS: Commercial stores in 1st floor.



DATA SHEET NUMBER: 115

BUILDING: Avenida Peru
ADDRESS : Avenida Peru 548

NUMBER OF STORIES: 7 BASEMENTS: HEIGHT: 18.4 m BUILDING AREA: 1,592 m^2

STRUCTURAL DESIGN:
WORK PERMIT : July 1953
FINAL RECEPTION : September 1961

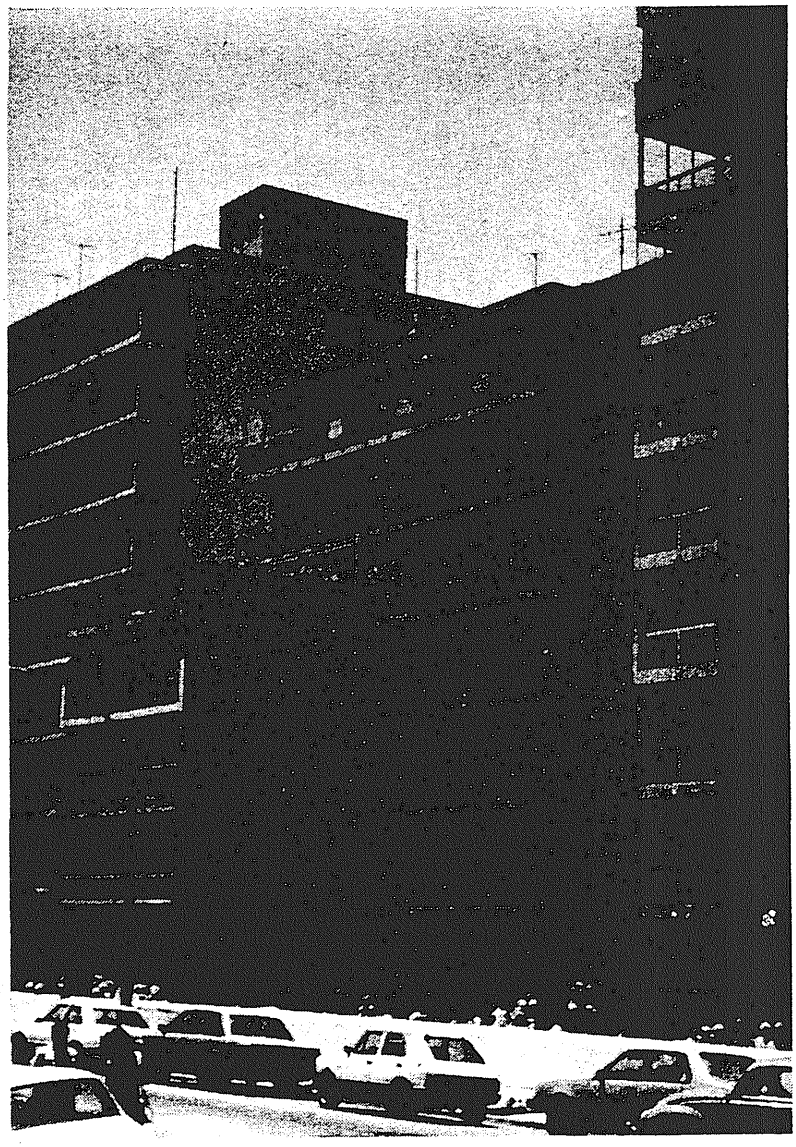
FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION:
PARTITIONS :

CONCRETE: R_{28} = kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS:



DATA SHEET NUMBER: 116

BUILDING: Baburizza
ADDRESS : Arrieta 698 (Cerro Castillo)

NUMBER OF STORIES: 7 BASEMENTS: HEIGHT: 24 m BUILDING AREA: m^2

STRUCTURAL DESIGN:
WORK PERMIT :
FINAL RECEPTION : 1957

FRAMING SYSTEM : Walls, beams and columns
TYPE OF FOUNDATION:
PARTITIONS :

CONCRETE: R_{28} = kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS: Irregular shape.

DATA SHEET NUMBER: 117

BUILDING: Viña Oeste
ADDRESS : 2 Poniente 471

NUMBER OF STORIES: 7 BASEMENTS: 1 HEIGHT: 16.5 m BUILDING AREA: 1,836 m^2

STRUCTURAL DESIGN:
WORK PERMIT : July 1981
FINAL RECEPTION : June 1982

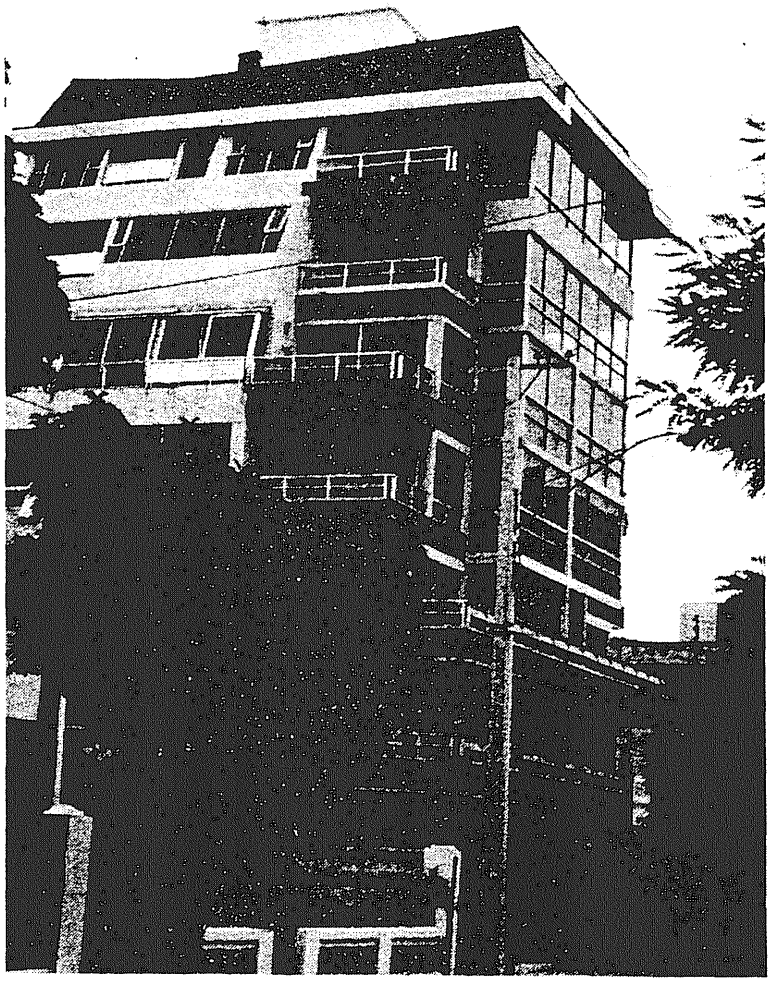
FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION:
PARTITIONS :

CONCRETE: R_{28} = kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS:



DATA SHEET NUMBER: 118

BUILDING: Eurosol
ADDRESS : Borgono 15645

NUMBER OF STORIES: 6 BASEMENTS: 1 HEIGHT: 20.3 m BUILDING AREA: 3,014 m^2

STRUCTURAL DESIGN: June 1981
WORK PERMIT :
FINAL RECEPTION :

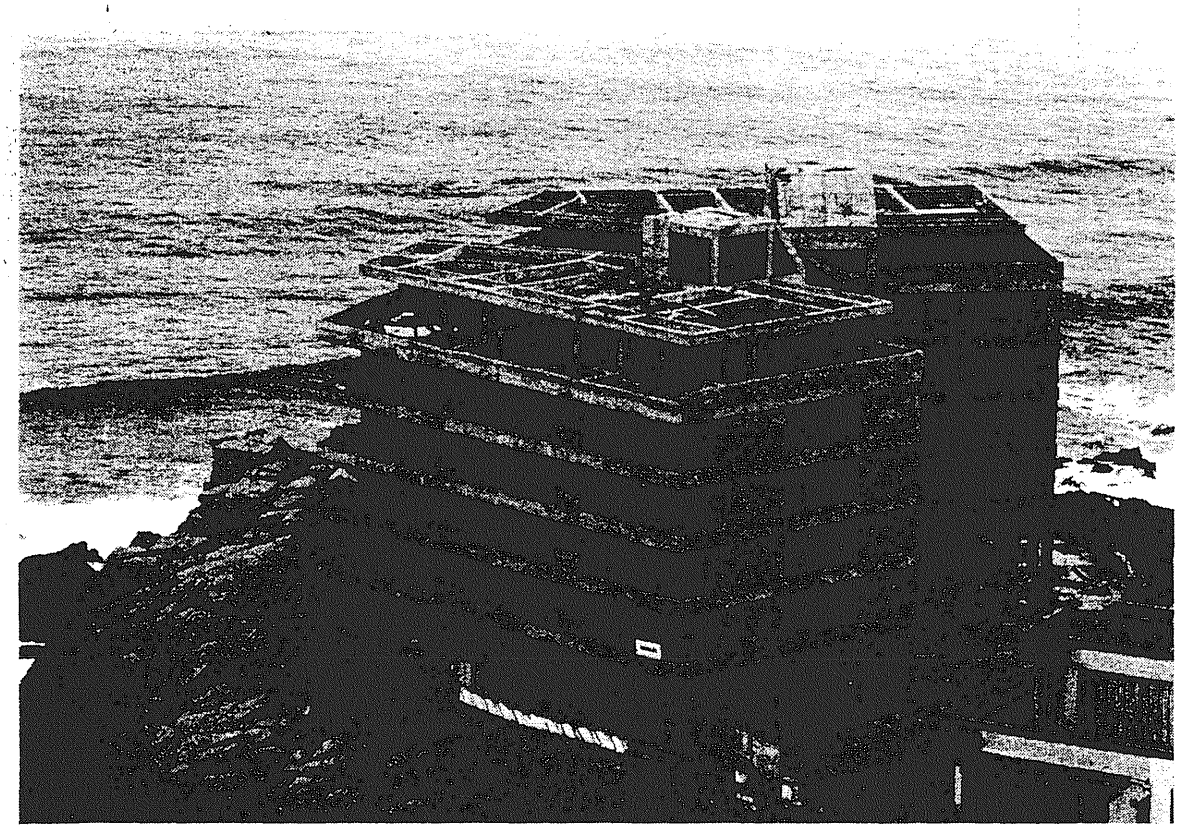
FRAMING SYSTEM : Frames (soft first story)
TYPE OF FOUNDATION: Continuous footing with perimeter beam and individual footings
PARTITIONS : Brick masonry

CONCRETE: R_{28} = kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS: There are two identical buildings, located in Reñaca. The buildings were under construction at the time of the earthquake. Founded on rock at the sea side.



DATA SHEET NUMBER: 119

BUILDING: Banco del Trabajo
ADDRESS : Arlegui 211

NUMBER OF STORIES: 6 BASEMENTS: HEIGHT: 19.8 m BUILDING AREA: 7,188 m^2

STRUCTURAL DESIGN:
WORK PERMIT :
FINAL RECEPTION :

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Mat foundation
PARTITIONS : Brick masonry

CONCRETE: R_{28} = 180 kg/cm^2 STEEL : A44-28H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO ___ LIGHT X MODERATE ___ SEVERE ___
COST OF REPAIR : $ 138,800

OBSERVATIONS: Concrete in 1st story and foundation R28=225 kg/cm^2.

DATA SHEET NUMBER: 120

BUILDING: Banco del Estado
ADDRESS : Villanelo 24

NUMBER OF STORIES: 6 BASEMENTS: HEIGHT: 19.0 m BUILDING AREA: m^2

STRUCTURAL DESIGN:
WORK PERMIT : 1951
FINAL RECEPTION :

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Isolated footings tied by beams and continuous footing around perimeter
PARTITIONS :

CONCRETE: R_{28} = kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS:

DATA SHEET NUMBER: 121

BUILDING: Banco de Concepcion
ADDRESS : Ecuador 112

NUMBER OF STORIES: 6 BASEMENTS: 1 HEIGHT: 17.9 m BUILDING AREA: 1,966 m^2

STRUCTURAL DESIGN:
WORK PERMIT :
FINAL RECEPTION :

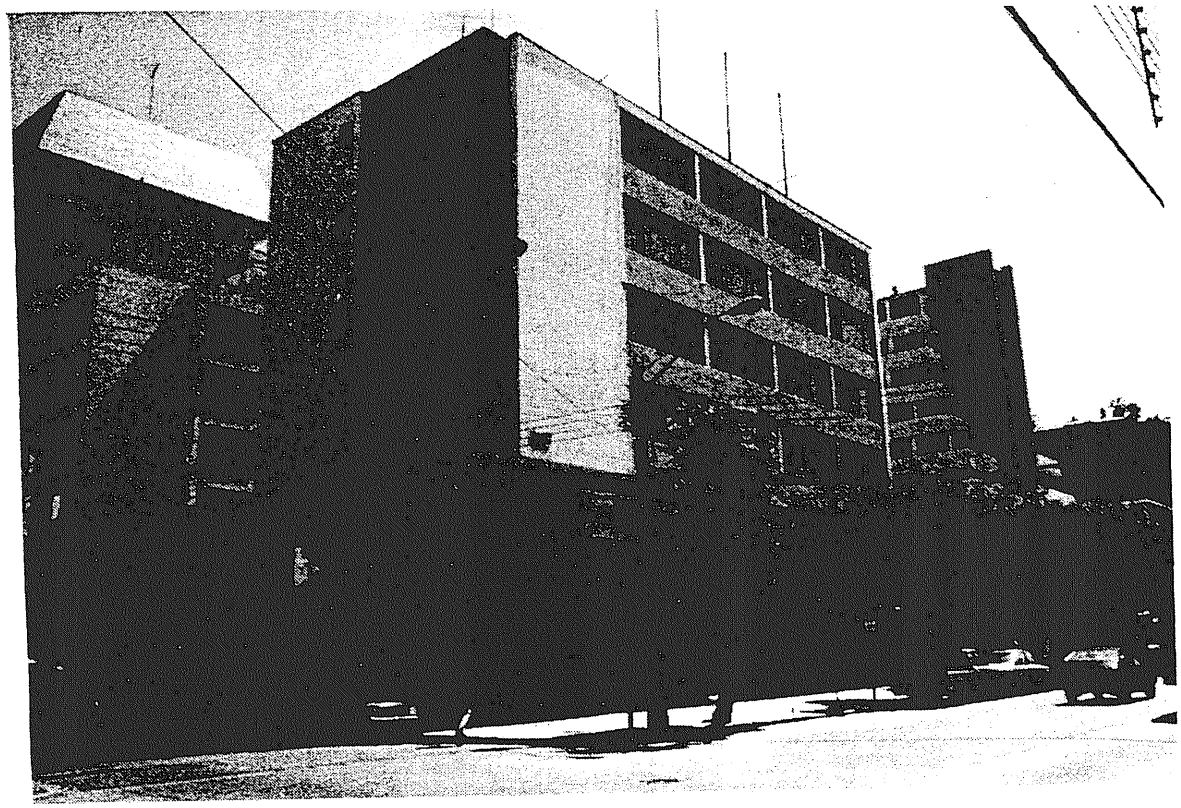
FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION:
PARTITIONS :

CONCRETE: R_{28} = 225 kg/cm^2 STEEL : A56-35H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS:



DATA SHEET NUMBER: 122

BUILDING: Cousiño - Block A
ADDRESS : Alvarez 186

NUMBER OF STORIES: 6 BASEMENTS: HEIGHT: 17.5 m BUILDING AREA: 1,650 m^2

STRUCTURAL DESIGN:
WORK PERMIT : 1961
FINAL RECEPTION : August 1964

FRAMING SYSTEM :
TYPE OF FOUNDATION: Continuous footing
PARTITIONS : Brick pandereta or volcanita

CONCRETE: R_{28} = 180 kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS:

DATA SHEET NUMBER: 123

BUILDING: Aruba
ADDRESS : 2 Poniente 659

NUMBER OF STORIES: 6 BASEMENTS: 1 HEIGHT: 16.9 m BUILDING AREA: 1,102 m^2

STRUCTURAL DESIGN:
WORK PERMIT : July 1978
FINAL RECEPTION : October 1979

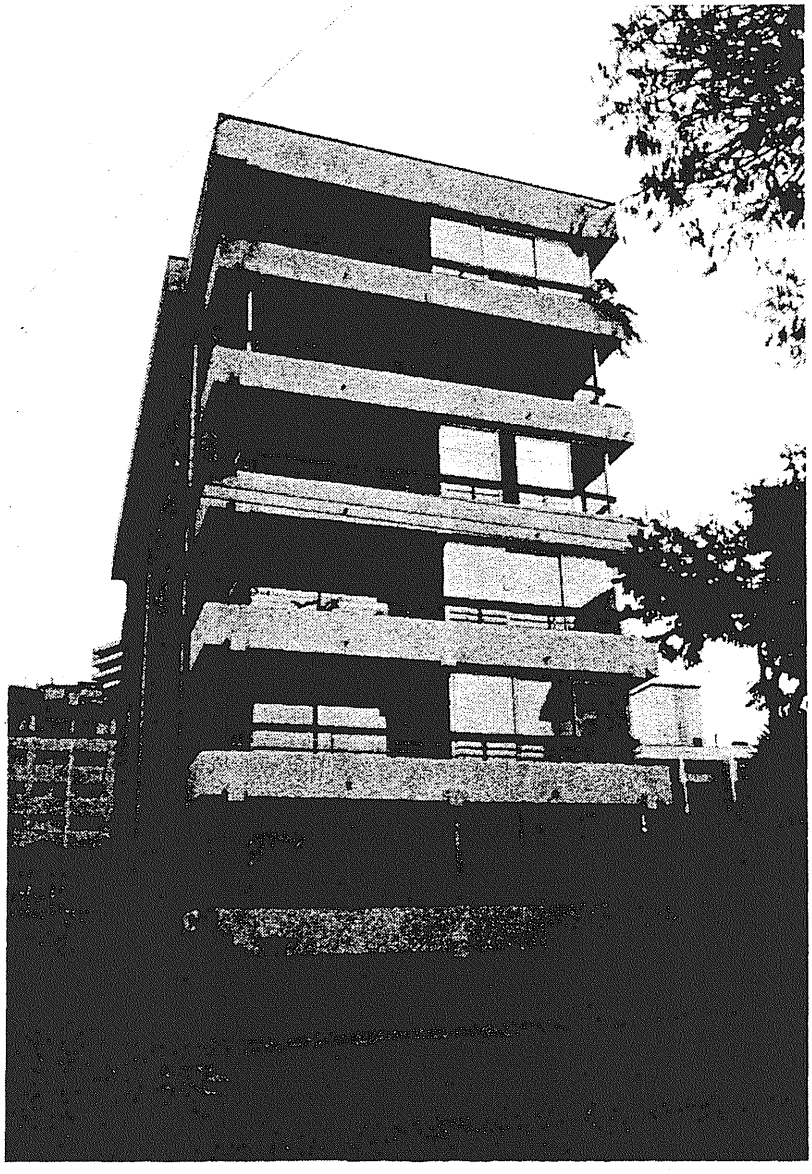
FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION:
PARTITIONS : Brick pandereta

CONCRETE: R_{28} = kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS:



DATA SHEET NUMBER: 124

BUILDING: Honolulu
ADDRESS : 2 Norte 360

NUMBER OF STORIES: 6 BASEMENTS: 1 HEIGHT: 16.8 m BUILDING AREA: 2,048 m^2

STRUCTURAL DESIGN: January 1975
WORK PERMIT : December 1975
FINAL RECEPTION : May 1977

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Continuous footing
PARTITIONS : Brick pandereta

CONCRETE: R_{28} = 225 kg/cm^2 STEEL : A63-42H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS: Water tank

DATA SHEET NUMBER: 125

BUILDING: Caleta Abraca
ADDRESS : Toro Herrera 307

NUMBER OF STORIES: 6 BASEMENTS: 3 HEIGHT: 16.6 m BUILDING AREA: 3,477 m^2

STRUCTURAL DESIGN: February 1981
WORK PERMIT : May 1981
FINAL RECEPTION : January 1986

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Mat foundation with continuous footing around perimeter
PARTITIONS : Brick masonry and volcanita

CONCRETE: R_{28} = kg/cm^2 STEEL : A44-28H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS:

DATA SHEET NUMBER: 126

BUILDING: Malau Taru
ADDRESS : Ecuador 116

NUMBER OF STORIES: 6 BASEMENTS: 1 HEIGHT: 16.5 m BUILDING AREA: 1,375 m^2

STRUCTURAL DESIGN:
WORK PERMIT : 1962
FINAL RECEPTION : December 1967

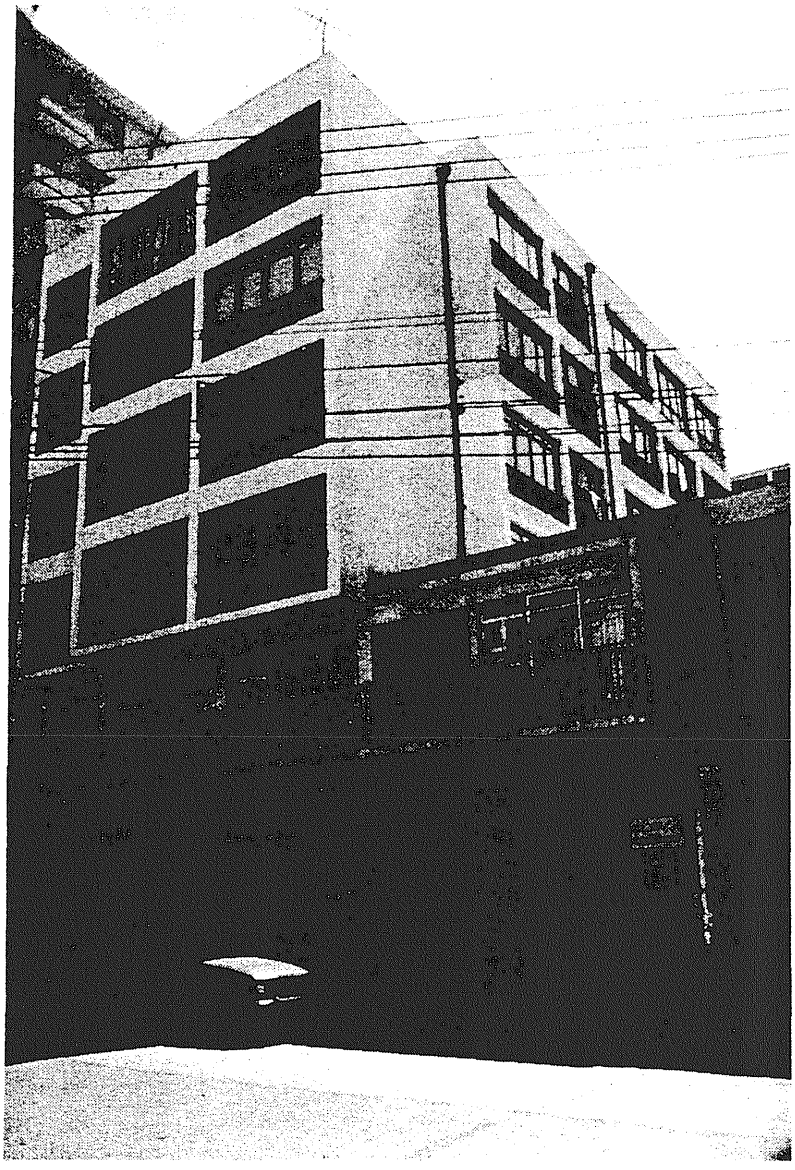
FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Continuous footing
PARTITIONS : Brick masonry

CONCRETE: R_{28} = 225 kg/cm^2 STEEL : A56-35H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS:



DATA SHEET NUMBER: 127

BUILDING: Reñaca Playa Club
ADDRESS : Corner of Borgoño and Angamos

NUMBER OF STORIES: 6 BASEMENTS: HEIGHT: 16.5 m BUILDING AREA: 4,814 m^2

STRUCTURAL DESIGN:
WORK PERMIT : January 1980
FINAL RECEPTION : February 1981

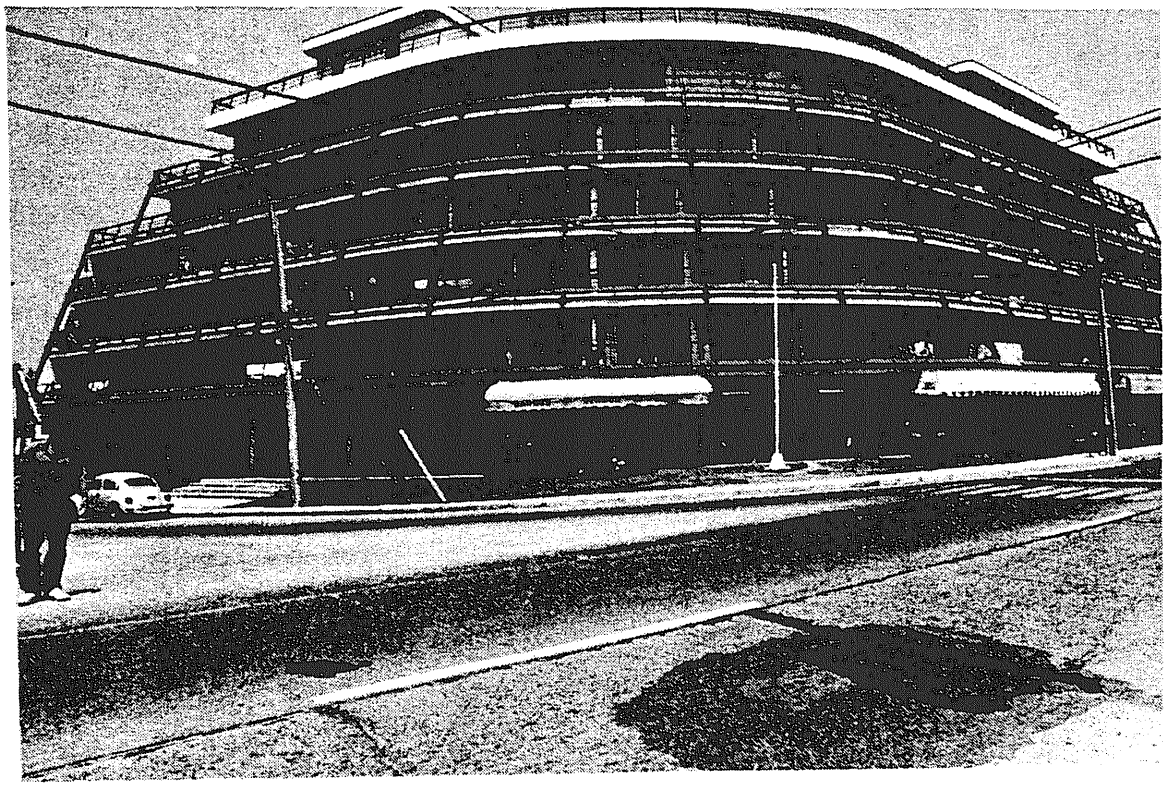
FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION:
PARTITIONS : Brick pandereta and bepolit

CONCRETE: R_{28} = kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS: Commercial plaza. Swimming pool and sun deck located on sixth floor. Located in Reñaca.



DATA SHEET NUMBER: 128

BUILDING: Nuevo Centro 2
ADDRESS : Libertad 39-67

NUMBER OF STORIES: 6 BASEMENTS: 1 HEIGHT: 16 m BUILDING AREA: 5,251 m^2

STRUCTURAL DESIGN: June 1977
WORK PERMIT : 1977
FINAL RECEPTION : November 1978

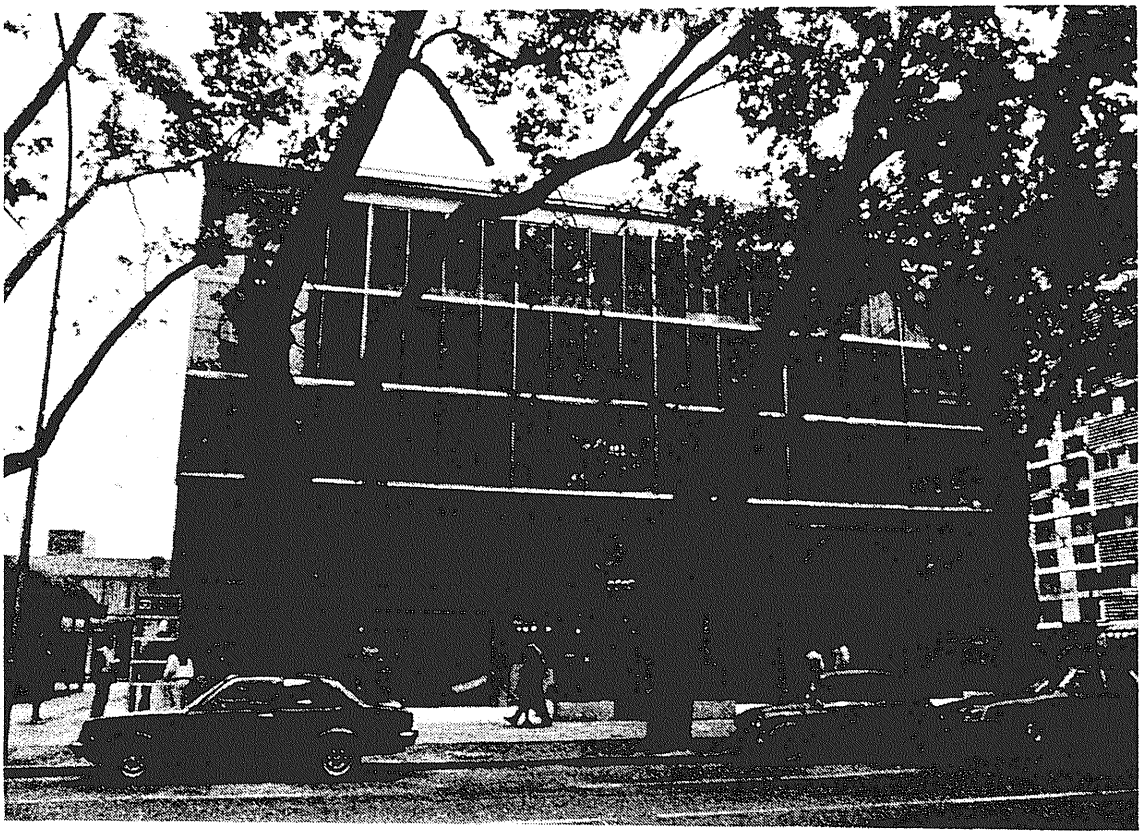
FRAMING SYSTEM : Structural walls and columns
TYPE OF FOUNDATION: Isolated footings tied by beams and continuous footing around the perimeter
PARTITIONS :

CONCRETE: R_{28} = 300 kg/cm^2 STEEL : A63-48H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS:



DATA SHEET NUMBER: 129

BUILDING: Población Lord Cochrane - Blocks D-E-F
ADDRESS : Calle Sin Salida

NUMBER OF STORIES: 6 BASEMENTS: HEIGHT: 16 m BUILDING AREA: 1,969 m^2

STRUCTURAL DESIGN:
WORK PERMIT : July 1963
FINAL RECEPTION : September 1964

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Continuous footing
PARTITIONS : Brick and lightweight panels

CONCRETE: R_{28} = 225 kg/cm^2 STEEL : A56-35H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS: There are three identical buildings.

DATA SHEET NUMBER: 130

BUILDING: Población Lord Cochrane - Block B
ADDRESS : Camino Real 2144-2300

NUMBER OF STORIES: 6 BASEMENTS: HEIGHT: 16 m BUILDING AREA: 2,119 m^2

STRUCTURAL DESIGN:
WORK PERMIT : July 1963
FINAL RECEPTION : September 1964

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Continuous footing tied to some isolated footings
PARTITIONS : Brick and lightweight panels

CONCRETE: R_{28} = 225 kg/cm^2 STEEL : A56-35H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS: Built in sector A.

DATA SHEET NUMBER: 131

BUILDING: Población Lord Cochrane - Block B
ADDRESS : Camino Real 2144-2300

NUMBER OF STORIES: 6 BASEMENTS: HEIGHT: 16.0 m BUILDING AREA: 2,078 m^2

STRUCTURAL DESIGN:
WORK PERMIT : July 1963
FINAL RECEPTION : September 1964

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Continuous footings tied to some isolated footings
PARTITIONS : Brick masonry and lightweight panels

CONCRETE: R_{28} = 225 kg/cm^2 STEEL : A56-35H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE :	NO	X	LIGHT	___	MODERATE	___	SEVERE ___
NONSTRUCTURAL DAMAGE:	NO	X	LIGHT	___	MODERATE	___	SEVERE ___
COST OF REPAIR :	$						

OBSERVATIONS: Built in sector C.

DATA SHEET NUMBER: 132

BUILDING: Población Lord Cochrane - Block B
ADDRESS : Camino Real 2144-2300

NUMBER OF STORIES: 6 BASEMENTS: HEIGHT: 16.0 m BUILDING AREA: 2,119 m^2

STRUCTURAL DESIGN:
WORK PERMIT : July 1963
FINAL RECEPTION : September 1964

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Continuous footing tied to some isolated footings
PARTITIONS : Brick masonry and lightweight panels

CONCRETE: R_{28} = 225 kg/cm^2 STEEL : A56-35H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE :	NO X	LIGHT ___	MODERATE ___	SEVERE ___
NONSTRUCTURAL DAMAGE:	NO X	LIGHT ___	MODERATE ___	SEVERE ___
COST OF REPAIR :	$			

OBSERVATIONS: Built in sector B.

DATA SHEET NUMBER: 133

BUILDING: Mar de Chile
ADDRESS : Calle 1 2411

NUMBER OF STORIES: 6 BASEMENTS: HEIGHT: 16 m BUILDING AREA: 1,527 m^2

STRUCTURAL DESIGN:
WORK PERMIT : March 1980
FINAL RECEPTION : December 1980

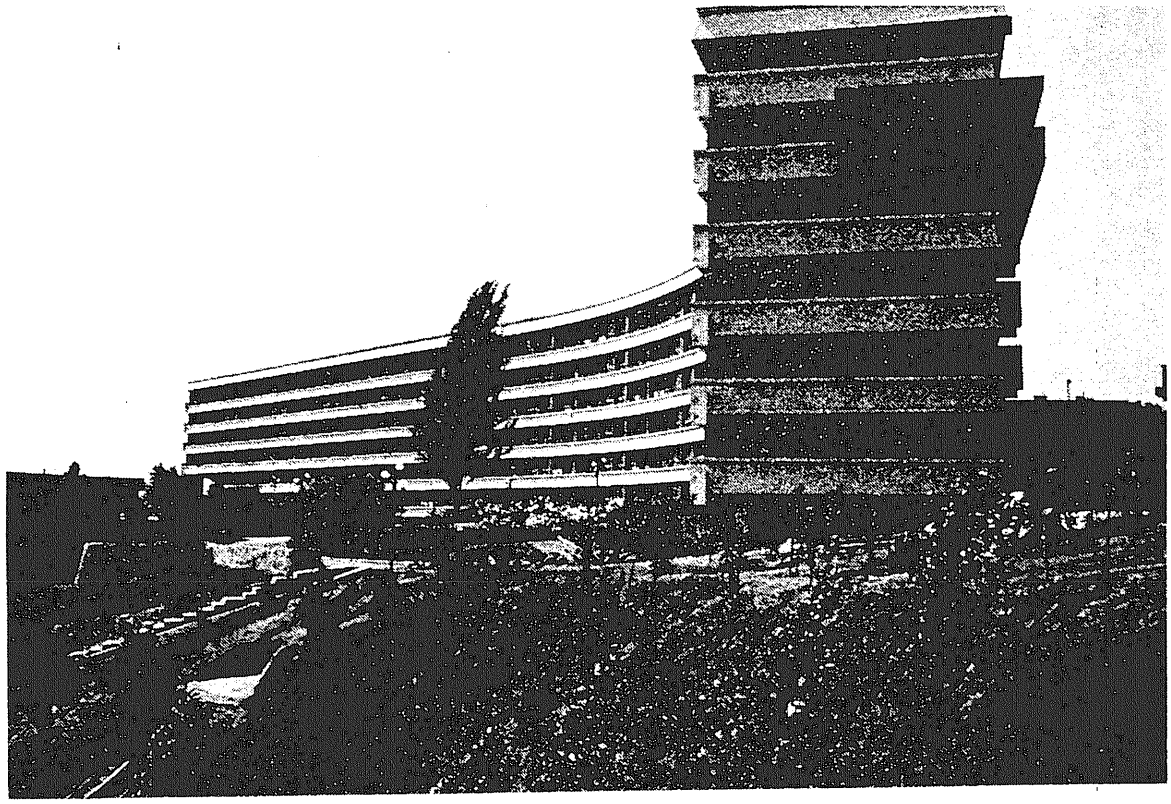
FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Continuous footing
PARTITIONS : Wood frame and volcanita

CONCRETE: R_{28} = 180 kg/cm^2 STEEL : A44-28H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS: Three buildings: A is 5 stories, B and C are 6 stories.



DATA SHEET NUMBER: 134

BUILDING: Cooperative Benidorm
ADDRESS : Subida Los Lirios 1570

NUMBER OF STORIES: 6 BASEMENTS: HEIGHT: 16 m BUILDING AREA: m^2

STRUCTURAL DESIGN:
WORK PERMIT : August 1979
FINAL RECEPTION : February 1980

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Continuous footing
PARTITIONS : Brick masonry

CONCRETE: R_{28} = 300 kg/cm^2 STEEL : A63-42H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS: There are six, type B buildings.

DATA SHEET NUMBER: 135

BUILDING: Merano
ADDRESS : 8 Norte 846

NUMBER OF STORIES: 6 BASEMENTS: HEIGHT: 15.7 m BUILDING AREA: 1,500 m^2

STRUCTURAL DESIGN:
WORK PERMIT : March 1979
FINAL RECEPTION :

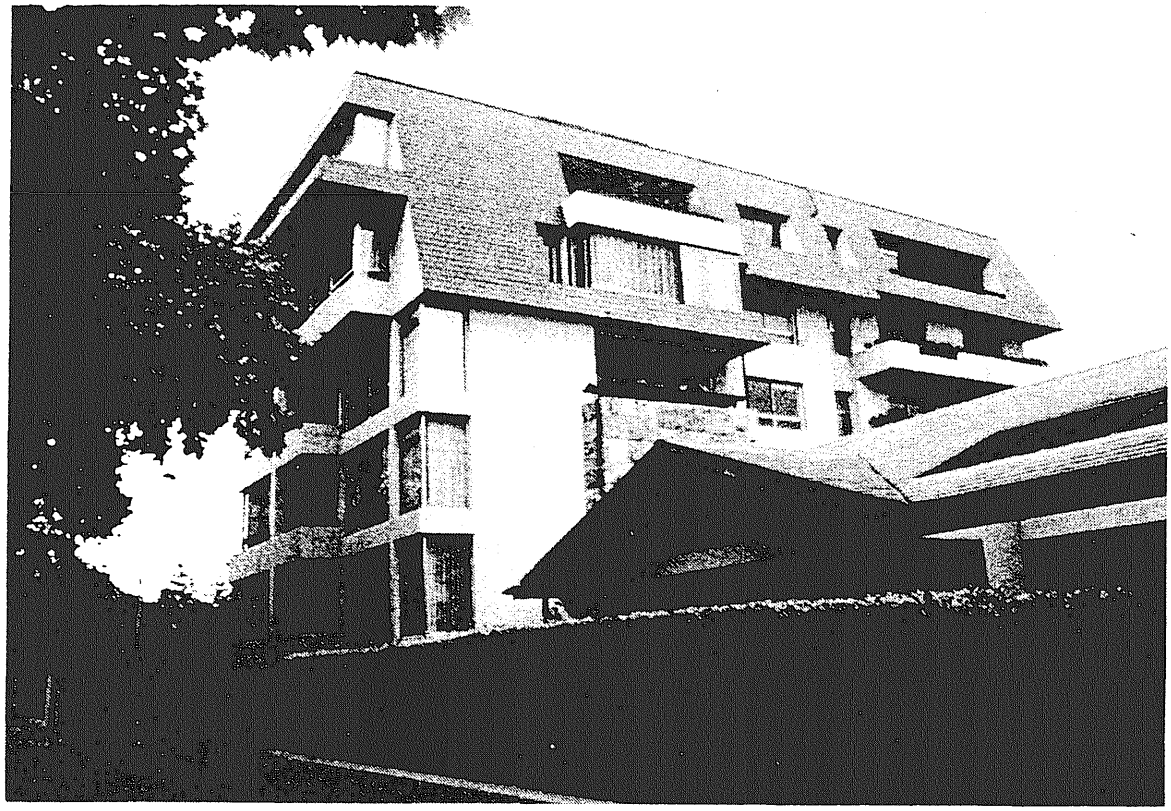
FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Mat foundation
PARTITIONS : Hollow brick pandereta

CONCRETE: R_{28} = 225 kg/cm^2 STEEL : A63-42H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE :	NO	X	LIGHT	___	MODERATE	___	SEVERE ___
NONSTRUCTURAL DAMAGE:	NO	X	LIGHT	___	MODERATE	___	SEVERE ___
COST OF REPAIR :	$						

OBSERVATIONS: Plan dimensions change with height.



DATA SHEET NUMBER: 136

BUILDING: Esmeralda
ADDRESS : Arlegui 473

NUMBER OF STORIES: 6 BASEMENTS: 1 HEIGHT: 15.6 m BUILDING AREA: 1,774 m^2

STRUCTURAL DESIGN: November 1962
WORK PERMIT : November 1962
FINAL RECEPTION :

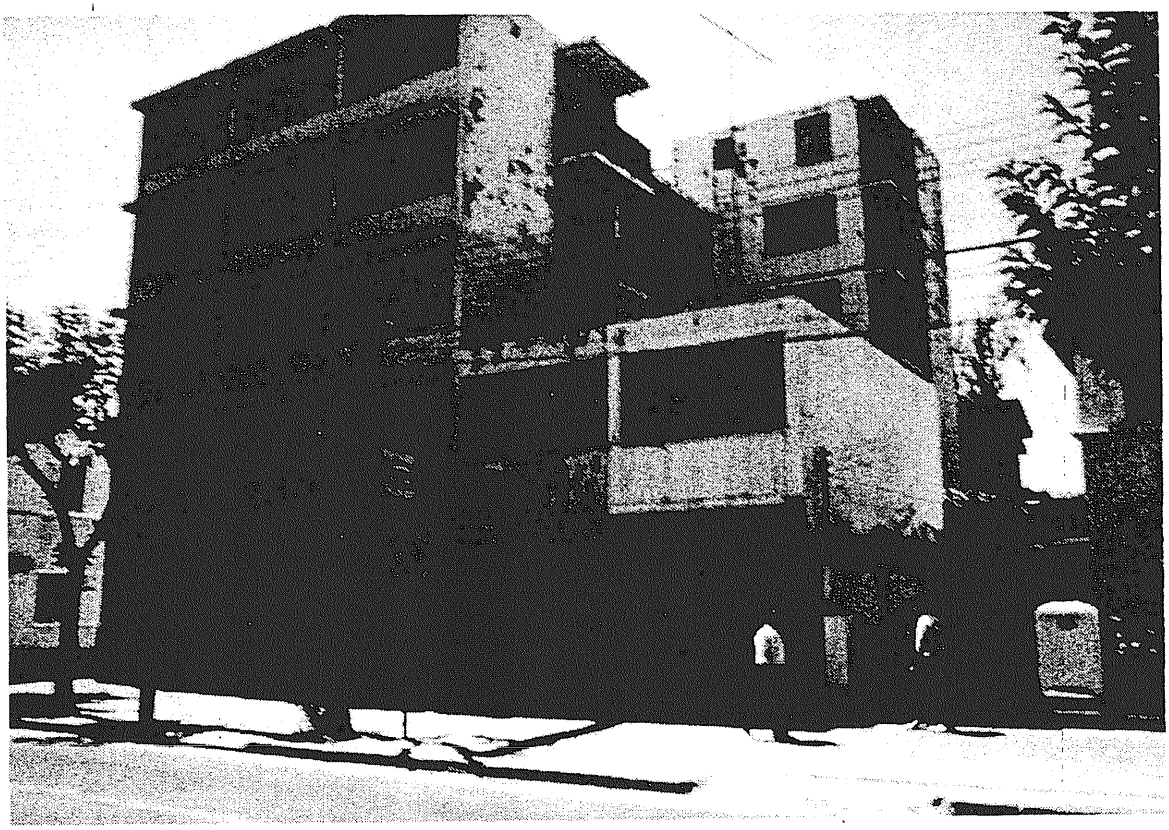
FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Mat foundation
PARTITIONS : Hollow brick pandereta

CONCRETE: R_{28} = 225 kg/cm^2 STEEL : A56-35H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS:



DATA SHEET NUMBER: 137

BUILDING: Monaco
ADDRESS : 4 Norte 612

NUMBER OF STORIES: 6 BASEMENTS: 1 HEIGHT: 15 m BUILDING AREA: 2,165 m^2

STRUCTURAL DESIGN:
WORK PERMIT : December 1962
FINAL RECEPTION : May 1965

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Continuous footing
PARTITIONS : Brick masonry

CONCRETE: R_{28} = kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE :	NO ___	LIGHT X	MODERATE ___	SEVERE ___
NONSTRUCTURAL DAMAGE:	NO ___	LIGHT X	MODERATE ___	SEVERE ___

COST OF REPAIR : $ 256,000

OBSERVATIONS:

DATA SHEET NUMBER: 138

BUILDING: Palermo
ADDRESS : 4 Poniente 345

NUMBER OF STORIES: 6 BASEMENTS: 1 HEIGHT: 15.0 m BUILDING AREA: 1,902 m^2

STRUCTURAL DESIGN: June 1981
WORK PERMIT : 1981
FINAL RECEPTION : December 1982

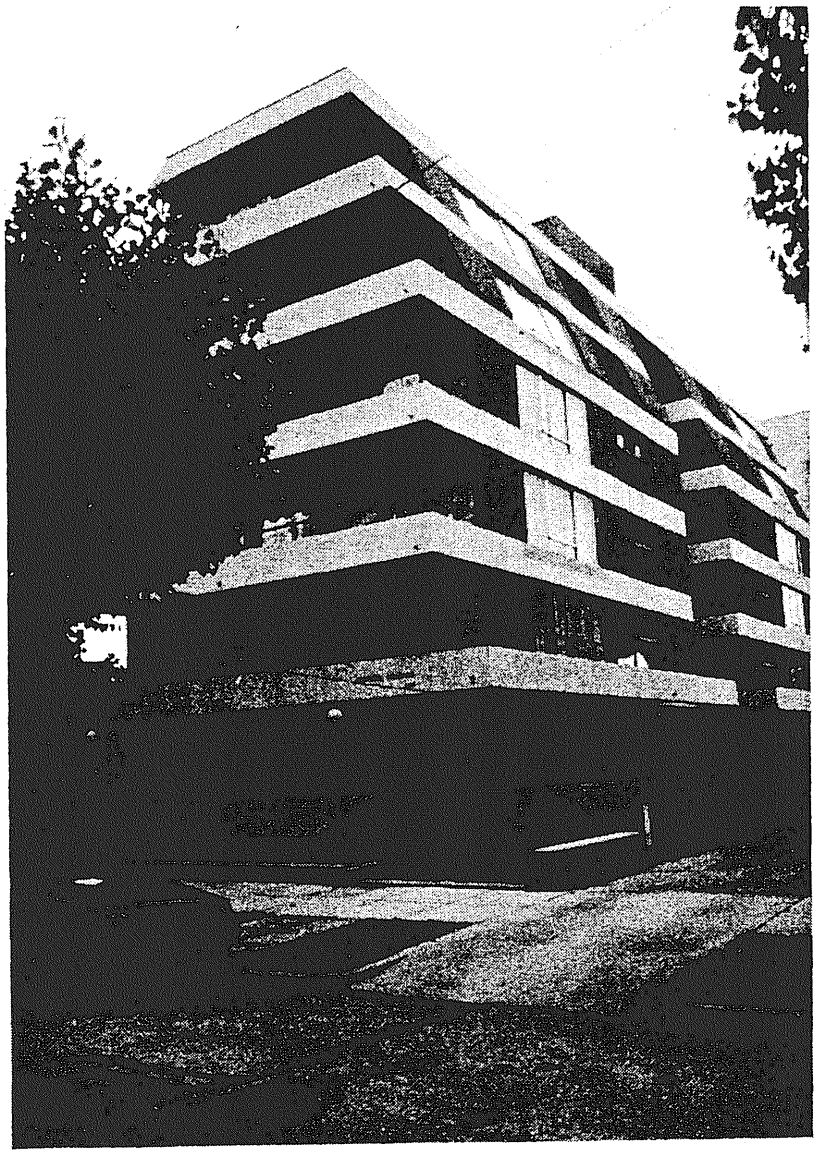
FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Isolated footings tied by beams
PARTITIONS : Brick pandereta

CONCRETE: R_{28} = 225 kg/cm^2 STEEL : A63-42H

ALLOWABLE SOIL PRESSURES STATIC: 2.5 kg/cm^2 DYNAMIC: 3.0 kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS: T_0 = 0.6 sec



DATA SHEET NUMBER: 139

BUILDING: Villa Anakena
ADDRESS : 23 Norte 990

NUMBER OF STORIES: 5 BASEMENTS: 1 HEIGHT: 15.9 m BUILDING AREA: 1,367 m^2

STRUCTURAL DESIGN:
WORK PERMIT : August 1979
FINAL RECEPTION : November 1982

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Continuous footings
PARTITIONS : Volcanita and asbestos cement

CONCRETE: R_{28} = 160 kg/cm^2 STEEL : A44-28H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE :	NO	X	LIGHT	___	MODERATE	___	SEVERE ___
NONSTRUCTURAL DAMAGE:	NO	X	LIGHT	___	MODERATE	___	SEVERE ___
COST OF REPAIR :	$						

OBSERVATIONS: Six buildings in the form of an arch.

DATA SHEET NUMBER: 140

BUILDING: Hotel O'Higgins
ADDRESS : Plaza Jose Francisco Vergara

NUMBER OF STORIES: 5 BASEMENTS: HEIGHT: 15.5 m BUILDING AREA: m^2

STRUCTURAL DESIGN:
WORK PERMIT :
FINAL RECEPTION :

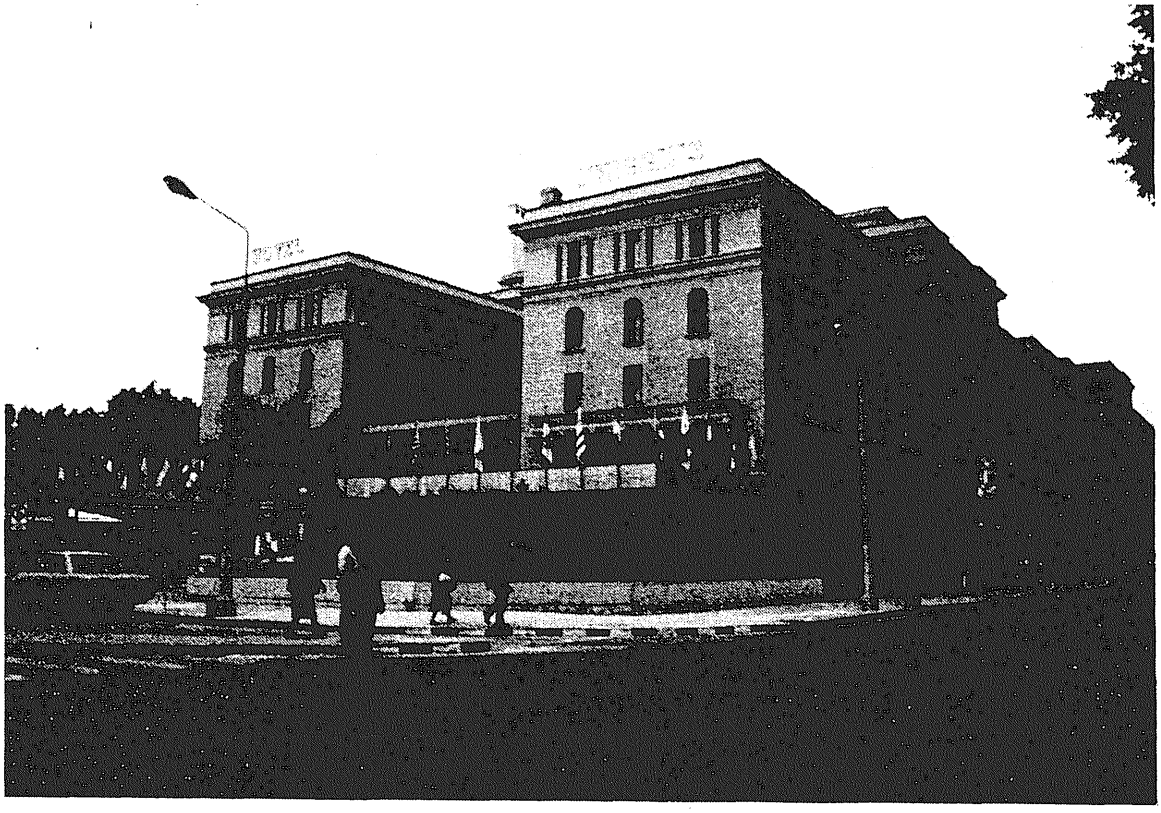
FRAMING SYSTEM : Walls and frames
TYPE OF FOUNDATION:
PARTITIONS :

CONCRETE: R_{28} = kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO ___ LIGHT X MODERATE ___ SEVERE ___
COST OF REPAIR : $ 3,319,091

OBSERVATIONS: Built circa 1930.



DATA SHEET NUMBER: 141

BUILDING: Covadonga
ADDRESS : Villanelo 158

NUMBER OF STORIES: 5 BASEMENTS: HEIGHT: 15.2 m BUILDING AREA: 1,429 m^2

STRUCTURAL DESIGN:
WORK PERMIT : 1956
FINAL RECEPTION : March 1958

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION:
PARTITIONS : Brick pandereta

CONCRETE: R_{28} = 225 kg/cm^2 STEEL : A56-35H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS:

DATA SHEET NUMBER: 142

BUILDING: 1 Oriente
ADDRESS : 1 Oriente 87

NUMBER OF STORIES: 5 BASEMENTS: 1 HEIGHT: 15.0 m BUILDING AREA: 968 m^2

STRUCTURAL DESIGN:
WORK PERMIT : November 1963
FINAL RECEPTION : November 1964

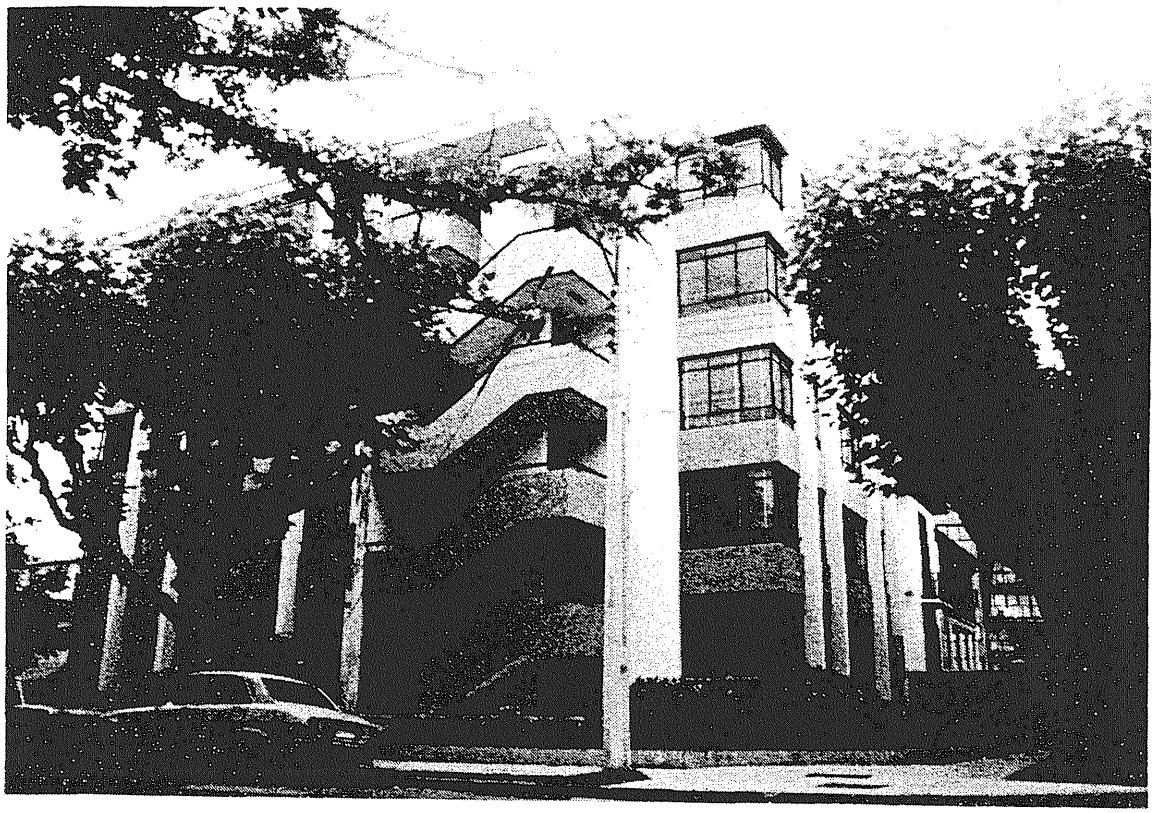
FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Continuous footing
PARTITIONS : Hollow brick or block

CONCRETE: R_{28} = 225 kg/cm^2 STEEL : A56-35H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS:



DATA SHEET NUMBER: 143

BUILDING: Verde Mar
ADDRESS : Corner of 3 Norte and 4 Poniente

NUMBER OF STORIES: 5 BASEMENTS: HEIGHT: 15.0 m BUILDING AREA: 5,787 m^2

STRUCTURAL DESIGN:
WORK PERMIT : 1959
FINAL RECEPTION : May 1961

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Continuous footing
PARTITIONS : Brick masonry

CONCRETE: R_{28} = kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO ___ LIGHT X MODERATE ___ SEVERE ___
COST OF REPAIR : $ 160,000

OBSERVATIONS: Water tank

DATA SHEET NUMBER: 144

BUILDING: Angamos
ADDRESS : Angamos 460-480

NUMBER OF STORIES: 5 BASEMENTS: 1 HEIGHT: 15 m BUILDING AREA: 1,785 m^2

STRUCTURAL DESIGN: November 1980
WORK PERMIT : December 1980
FINAL RECEPTION :

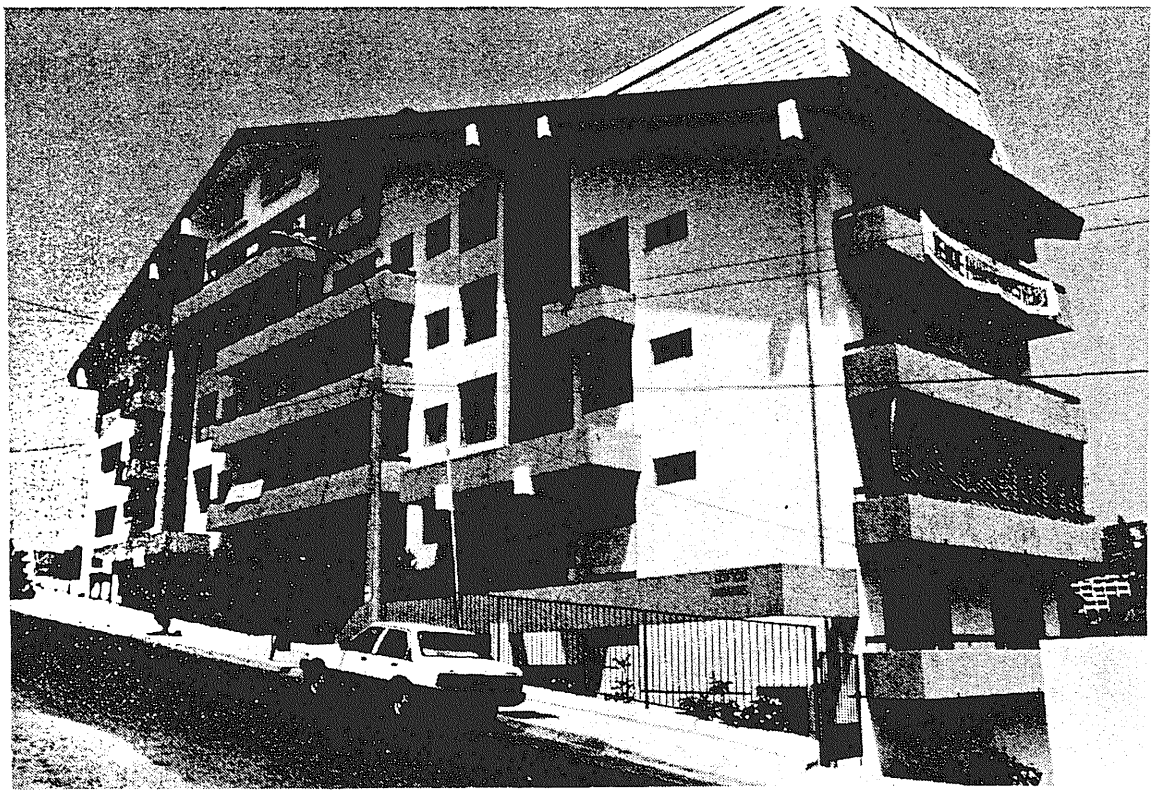
FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Continuous footing
PARTITIONS : Volcanita

CONCRETE: R_{28} = 225 kg/cm^2 STEEL : A44-28H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS: Located in Reñaca.



DATA SHEET NUMBER: 145

BUILDING: Nautico
ADDRESS : Borgono 21659

NUMBER OF STORIES: 5 BASEMENTS: 1 HEIGHT: 14.6 m BUILDING AREA: 2,043 m^2

STRUCTURAL DESIGN:
WORK PERMIT : December 1962
FINAL RECEPTION : September 1964

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION:
PARTITIONS :

CONCRETE: R_{28} = 160 kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS: Located in Con-Con.

DATA SHEET NUMBER: 146

BUILDING: Pleamar
ADDRESS : Ignacio Carrera Pinto 150

NUMBER OF STORIES: 5 BASEMENTS: 1 HEIGHT: 14.5 m BUILDING AREA: 3,161 m^2

STRUCTURAL DESIGN:
WORK PERMIT : May 1980
FINAL RECEPTION : March 1981

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION:
PARTITIONS : Brick pandereta

CONCRETE: R_{28} = 170 kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS: Located in Reñaca.

DATA SHEET NUMBER: 147

BUILDING: Liguria
ADDRESS : 2 Norte 279

NUMBER OF STORIES: 5 BASEMENTS: HEIGHT: 14.3 m BUILDING AREA: 1,704 m^2

STRUCTURAL DESIGN: May 1960
WORK PERMIT : 1960
FINAL RECEPTION : December 1961

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION:
PARTITIONS : Brick masonry

CONCRETE: R_{28} = kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS:

DATA SHEET NUMBER: 148

BUILDING: Bagnara
ADDRESS : Villanelo 56

NUMBER OF STORIES: 5 BASEMENTS: HEIGHT: 14.2 m BUILDING AREA: 3,570 m^2

STRUCTURAL DESIGN: May 1955
WORK PERMIT : 1955
FINAL RECEPTION :

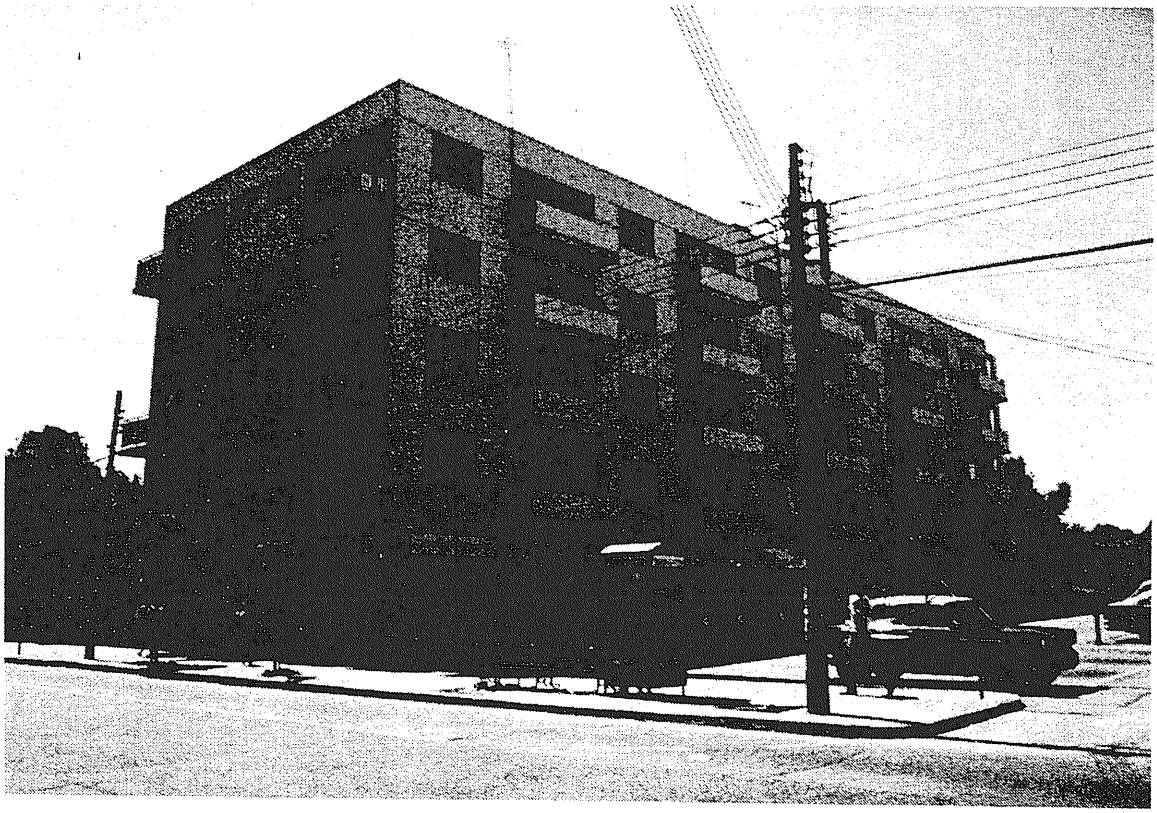
FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Continuous and isolated footings
PARTITIONS : Brick masonry

CONCRETE: R_{28} = kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS: "L" shaped plan.



DATA SHEET NUMBER: 149

BUILDING: Faura
ADDRESS : 3 Norte 131

NUMBER OF STORIES: 5 BASEMENTS: HEIGHT: 14.2 m BUILDING AREA: 1,163 m^2

STRUCTURAL DESIGN:
WORK PERMIT : 1956
FINAL RECEPTION : January 1959

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION:
PARTITIONS : Brick masonry

CONCRETE: R_{28} = 160 kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS: Water tank

DATA SHEET NUMBER: 150

BUILDING: Población Lord Cochrane - Blocks G-H-I
ADDRESS : Calle Sin Salida

NUMBER OF STORIES: 5 BASEMENTS: HEIGHT: 14.0 m BUILDING AREA: 1,641 m^2

STRUCTURAL DESIGN:
WORK PERMIT : July 1963
FINAL RECEPTION : September 1964

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Continuous footing
PARTITIONS : Brick masonry and lightweight panels

CONCRETE: R_{28} = 225 kg/cm^2 STEEL : A56-35H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE :	NO	X	LIGHT	___	MODERATE	___	SEVERE ___
NONSTRUCTURAL DAMAGE:	NO	X	LIGHT	___	MODERATE	___	SEVERE ___
COST OF REPAIR :	$						

OBSERVATIONS:

DATA SHEET NUMBER: 151

BUILDING: Población Lord Cochrane - Block B
ADDRESS : Camino Real 2144-2300

NUMBER OF STORIES: 5 BASEMENTS: HEIGHT: 14.0 m BUILDING AREA: 1,766 m^2

STRUCTURAL DESIGN:
WORK PERMIT : July 1963
FINAL RECEPTION : September 1964

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Continuous footing tied to some isolated footings
PARTITIONS : Brick masonry and lightweight panels

CONCRETE: R_{28} = 225 kg/cm^2 STEEL : A56-35H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS: There are three identical buildings which are located in sector D.

DATA SHEET NUMBER: 152

BUILDING: Población Lord Cochrane - Block B
ADDRESS : Camino Real 2144-2300

NUMBER OF STORIES: 5 BASEMENTS: HEIGHT: 14.0 m BUILDING AREA: 1,766 m^2

STRUCTURAL DESIGN:
WORK PERMIT : July 1963
FINAL RECEPTION : September 1964

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Continuous footing tied to some isolated footings
PARTITIONS : Brick masonry and lightweight panels

CONCRETE: R_{28} = 225 kg/cm^2 STEEL : A56-35H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS: Located in sector E.

DATA SHEET NUMBER: 153

BUILDING: Población Lord Cochrane - Blocks J-K-L-M-N
ADDRESS : Manuel Rodriguez 1423-1563

NUMBER OF STORIES: 5 BASEMENTS: HEIGHT: 14.0 m BUILDING AREA: 770 m^2

STRUCTURAL DESIGN:
WORK PERMIT : 1963
FINAL RECEPTION : 1964

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: For block N continuous footing and foundation beam
PARTITIONS : Brick masonry and lightweight panels

CONCRETE: R_{28} = 225 kg/cm^2 STEEL : A56-35H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE :	NO	X	LIGHT	___	MODERATE	___	SEVERE	___
NONSTRUCTURAL DAMAGE:	NO	X	LIGHT	___	MODERATE	___	SEVERE	___
COST OF REPAIR :	$							

OBSERVATIONS: There are five identical buildings.

DATA SHEET NUMBER: 154

BUILDING: Población Empart - Block B
ADDRESS : 15 Norte 1027

NUMBER OF STORIES: 5 BASEMENTS: 1 HEIGHT: 14.0 m BUILDING AREA: 3,388 m^2

STRUCTURAL DESIGN:
WORK PERMIT : July 1963
FINAL RECEPTION : October 1970

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION:
PARTITIONS :

CONCRETE: R_{28} = 225 kg/cm^2 STEEL : A56-35H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE :	NO	X	LIGHT	___	MODERATE	___	SEVERE ___
NONSTRUCTURAL DAMAGE:	NO	X	LIGHT	___	MODERATE	___	SEVERE ___
COST OF REPAIR :	$						

OBSERVATIONS: There are four identical buildings.

DATA SHEET NUMBER: 155

BUILDING: Población Empart - Block C
ADDRESS : 15 Norte 1003

NUMBER OF STORIES: 5 BASEMENTS: 1 HEIGHT: 14.0 m BUILDING AREA: 3,412 m^2

STRUCTURAL DESIGN:
WORK PERMIT : July 1963
FINAL RECEPTION : October 1970

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION:
PARTITIONS :

CONCRETE: R_{28} = 225 kg/cm^2 STEEL : A56-35H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS:

DATA SHEET NUMBER: 156

BUILDING: Población Empart - Block A
ADDRESS : 15 Norte 1045-1067-1093

NUMBER OF STORIES: 5 BASEMENTS: 1 HEIGHT: 14.0 m BUILDING AREA: 3,416 m^2

STRUCTURAL DESIGN:
WORK PERMIT : July 1963
FINAL RECEPTION : October 1970

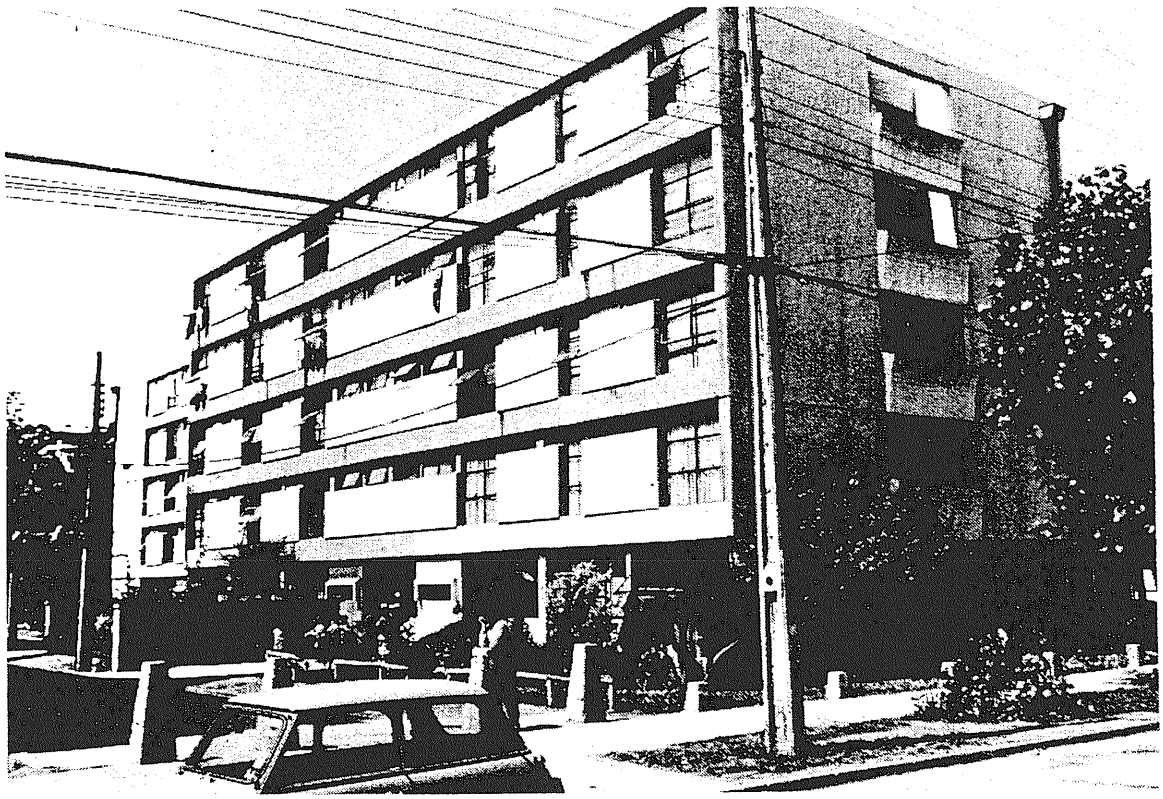
FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION:
PARTITIONS :

CONCRETE: R_{28} = 225 kg/cm^2 STEEL : A56-35H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS: There are six identical buildings.



DATA SHEET NUMBER: 157

BUILDING: Población Empart - Block D
ADDRESS : 15 Norte 1027

NUMBER OF STORIES: 5 BASEMENTS: 1 HEIGHT: 14.0 m BUILDING AREA: m^2

STRUCTURAL DESIGN:
WORK PERMIT : July 1963
FINAL RECEPTION : October 1970

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION:
PARTITIONS :

CONCRETE: R_{28} = 225 kg/cm^2 STEEL : A56-35H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS:

DATA SHEET NUMBER: 158

BUILDING: Los Olmos
ADDRESS : Los Olmos 11-33

NUMBER OF STORIES: 5 BASEMENTS: 1 HEIGHT: 13.8 m BUILDING AREA: 5,597 m^2

STRUCTURAL DESIGN:
WORK PERMIT : March 1963
FINAL RECEPTION :

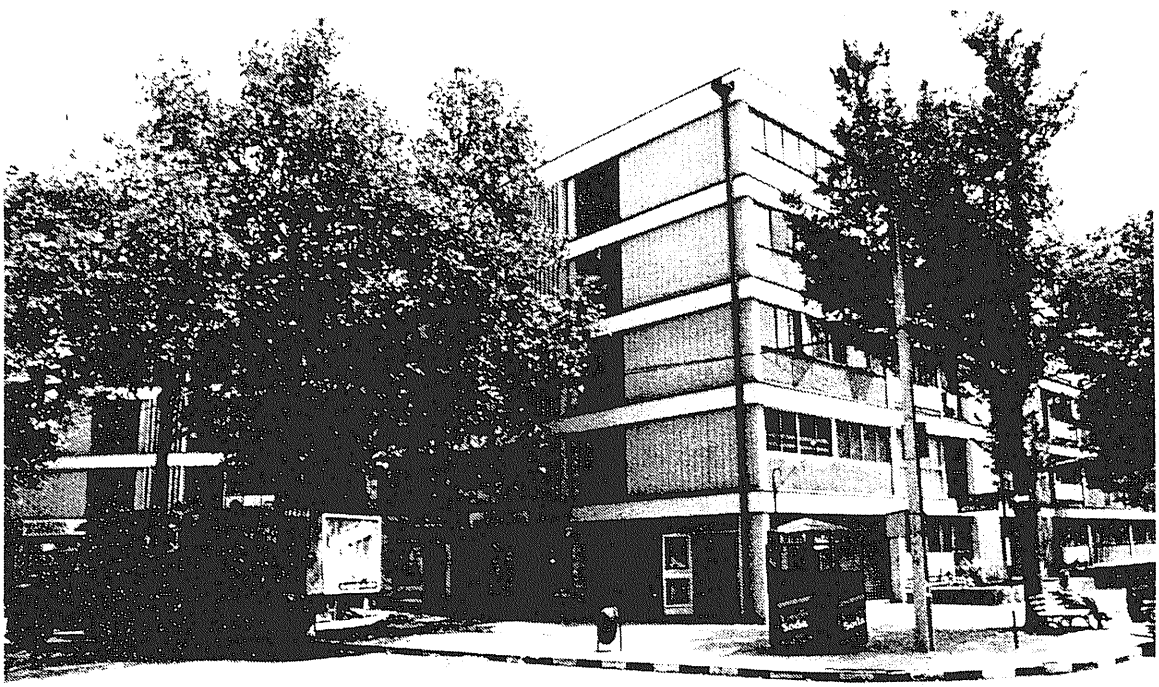
FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Continuous footing
PARTITIONS : Brick masonry

CONCRETE: R_{28} = kg/cm^2 STEEL : Twisted

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS:



DATA SHEET NUMBER: 159

BUILDING: Prunotto
ADDRESS : Valparaiso 279

NUMBER OF STORIES: 5 BASEMENTS: HEIGHT: 13.7 m BUILDING AREA: 903 m^2

STRUCTURAL DESIGN: July 1955
WORK PERMIT : 1955
FINAL RECEPTION : April 1960

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Continuous footing
PARTITIONS :

CONCRETE: R_{28} = kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS: Two independent buildings.

DATA SHEET NUMBER: 160

BUILDING: San Jose
ADDRESS : Alvarez 247

NUMBER OF STORIES: 5 BASEMENTS: 1 HEIGHT: 13.5 m BUILDING AREA: 735 m^2

STRUCTURAL DESIGN: July 1961
WORK PERMIT : February 1962
FINAL RECEPTION : April 1968

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Continuous footing
PARTITIONS : Brick pandereta

CONCRETE: R_{28} = kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS:

DATA SHEET NUMBER: 161

BUILDING: Población Limonares - 1006
ADDRESS : Final de 1 Norte

NUMBER OF STORIES: 5 BASEMENTS: HEIGHT: 13.5 m BUILDING AREA: 1,551 m^2

STRUCTURAL DESIGN:
WORK PERMIT : December 1959
FINAL RECEPTION :

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Continuous footing
PARTITIONS : Brick pandereta

CONCRETE: R_{28} = 160 kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO ___ LIGHT X MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO ___ LIGHT X MODERATE ___ SEVERE ___
COST OF REPAIR : $ 23,785,831

OBSERVATIONS: There are three identical buildings. Repair cost is for the 7 buildings in the resort.

DATA SHEET NUMBER: 162

BUILDING: Población Limonares - 1007
ADDRESS : Final de 1 Norte

NUMBER OF STORIES: 5 BASEMENTS: HEIGHT: 13.5 m BUILDING AREA: 1,290 m^2

STRUCTURAL DESIGN:
WORK PERMIT : December 1959
FINAL RECEPTION :

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Continuous footing
PARTITIONS : Brick pandereta

CONCRETE: R_{28} = 160 kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE :	NO ___	LIGHT X	MODERATE ___	SEVERE ___
NONSTRUCTURAL DAMAGE:	NO ___	LIGHT X	MODERATE ___	SEVERE ___

COST OF REPAIR : $ 23,785,831

OBSERVATIONS: There are four identical buildings. Repair cost is for 7 buildings in the resort.

DATA SHEET NUMBER: 163

BUILDING: Barrios
ADDRESS : 2 Norte 1134

NUMBER OF STORIES: 5 BASEMENTS: 1 HEIGHT: 13.5 m BUILDING AREA: 1,212 m^2

STRUCTURAL DESIGN:
WORK PERMIT : April 1963
FINAL RECEPTION : June 1964

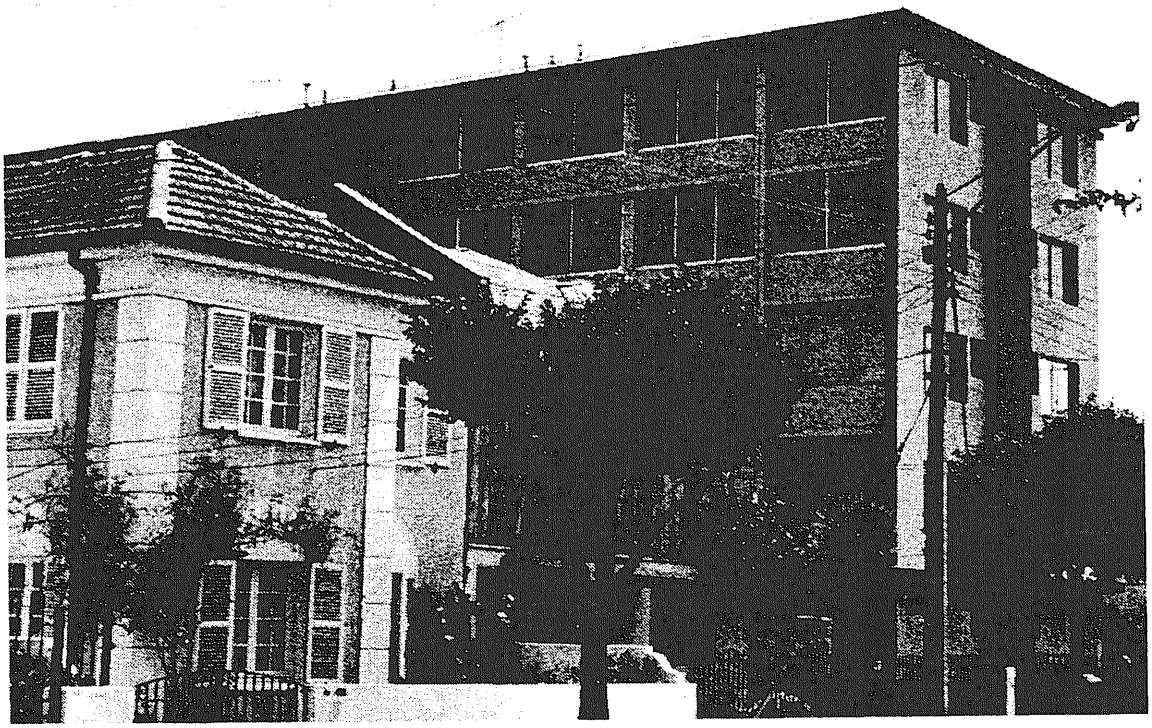
FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Continuous footing
PARTITIONS : Hollow brick

CONCRETE: R_{28} = kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO ___ LIGHT ___ MODERATE X SEVERE ___
NONSTRUCTURAL DAMAGE: NO ___ LIGHT ___ MODERATE X SEVERE ___
COST OF REPAIR : $

OBSERVATIONS:



DATA SHEET NUMBER: 164

BUILDING: Bonanza
ADDRESS : Avenida Borgono 21711

NUMBER OF STORIES: 5 BASEMENTS: 1 HEIGHT: 13.5 m BUILDING AREA: 1,513 m^2

STRUCTURAL DESIGN: 1972
WORK PERMIT : December 1974
FINAL RECEPTION :

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Continuous and isolated footings
PARTITIONS : Volcanita

CONCRETE: R_{28} = 180 kg/cm^2 STEEL : A44-28H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE :	NO X	LIGHT ___	MODERATE ___	SEVERE ___
NONSTRUCTURAL DAMAGE:	NO X	LIGHT ___	MODERATE ___	SEVERE ___
COST OF REPAIR :	$			

OBSERVATIONS: Located in Con-Con.

DATA SHEET NUMBER: 165

BUILDING: Viña Sol
ADDRESS : 5 Norte 531

NUMBER OF STORIES: 5 BASEMENTS: HEIGHT: 13.5 m BUILDING AREA: 883 m^2

STRUCTURAL DESIGN:
WORK PERMIT : October 1979
FINAL RECEPTION :

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION:
PARTITIONS :

CONCRETE: R_{28} = 225 kg/cm^2 STEEL : A44-28H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO _X_ LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO _X_ LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS:

DATA SHEET NUMBER: 166

BUILDING: Eimar
ADDRESS : 2 Poniente 545

NUMBER OF STORIES: 5 BASEMENTS: 1 HEIGHT: 13.1 m BUILDING AREA: 1,088 m^2

STRUCTURAL DESIGN:
WORK PERMIT : November 1978
FINAL RECEPTION : September 1979

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION:
PARTITIONS : Volcanita

CONCRETE: R_{28} = 180 kg/cm^2 STEEL : A44-28H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS:

DATA SHEET NUMBER: 167

BUILDING: Canal Beagle - K5
ADDRESS : Población Canal Beagle

NUMBER OF STORIES: 5 BASEMENTS: HEIGHT: 13.0 m BUILDING AREA: 750 m^2

STRUCTURAL DESIGN:
WORK PERMIT :
FINAL RECEPTION : 1974

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION:
PARTITIONS :

CONCRETE: R_{28} = 180 kg/cm^2 STEEL : A44-28H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE :	NO ___	LIGHT ___	MODERATE X	SEVERE X
NONSTRUCTURAL DAMAGE:	NO ___	LIGHT ___	MODERATE X	SEVERE X
COST OF LOSS :	$ 18,750,000 (*)			

OBSERVATIONS: There are eight identical buildings. (*) Loss corresponds to the estimated value of each building.

DATA SHEET NUMBER: 168

BUILDING: Canal Beagle H.A.
ADDRESS : Población Canal Beagle

NUMBER OF STORIES: 5 BASEMENTS: HEIGHT: 13.0 m BUILDING AREA: 705 m^2

STRUCTURAL DESIGN:
WORK PERMIT :
FINAL RECEPTION : 1977

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION:
PARTITIONS :

CONCRETE: R_{28} = kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE :	NO ___	LIGHT ___	MODERATE ___	SEVERE X
NONSTRUCTURAL DAMAGE:	NO ___	LIGHT ___	MODERATE ___	SEVERE X
COST OF LOSS :	$ 35,250,000 (*)			

OBSERVATIONS: Thirty-four buildings located in 17 pairs. (*) Loss corresponds to the estimated value of each building.

DATA SHEET NUMBER: 169

BUILDING: Canal Beagle J5
ADDRESS : Población Canal Beagle

NUMBER OF STORIES: 5 BASEMENTS: HEIGHT: 13.0 m BUILDING AREA: 730 m^2

STRUCTURAL DESIGN:
WORK PERMIT :
FINAL RECEPTION : 1974

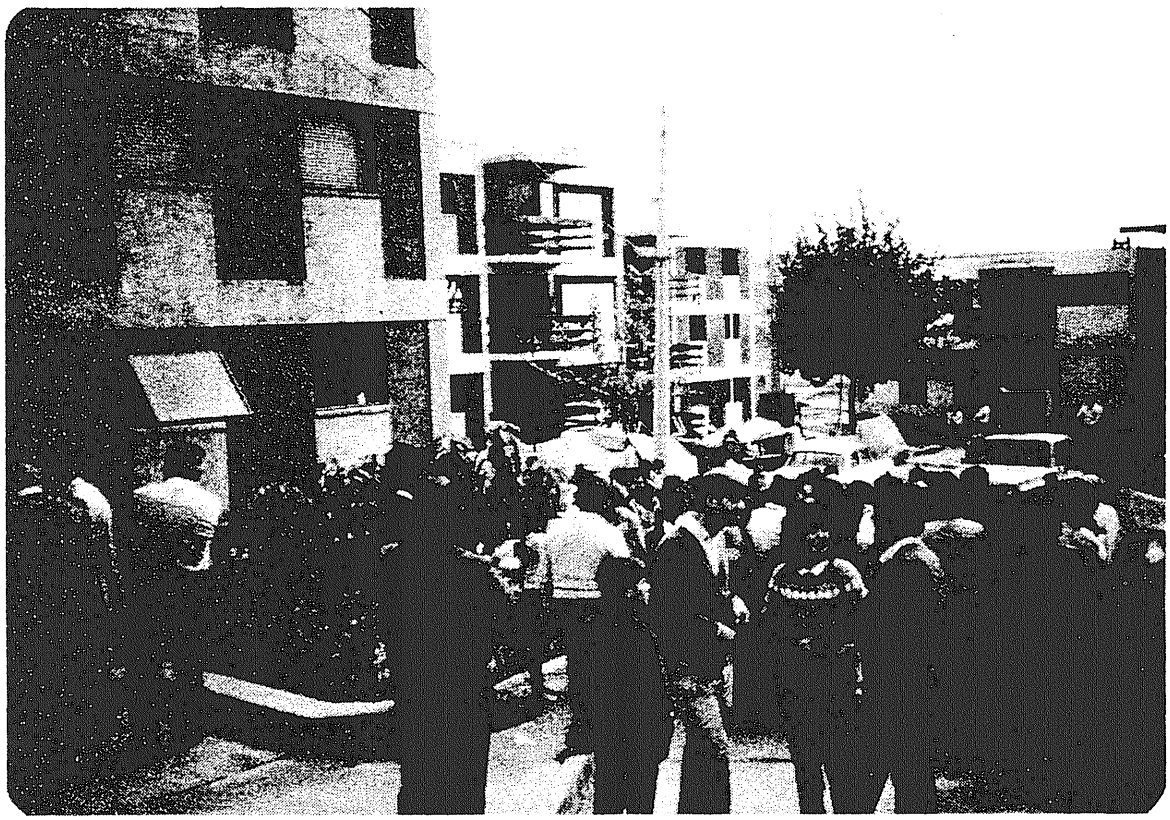
FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Continuous footings tied by beams
PARTITIONS : Volcanita

CONCRETE: R_{28} = 180 kg/cm^2 STEEL : A44-28H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO ___ LIGHT ___ MODERATE X SEVERE X
NONSTRUCTURAL DAMAGE: NO ___ LIGHT ___ MODERATE X SEVERE X
COST OF LOSS : $ 36,500,000 (*)

OBSERVATIONS: Forty-two buildings located in 21 pairs. (*) Loss corresponds to the estimated value of each building.



DATA SHEET NUMBER: 170

BUILDING: Nieto
ADDRESS : Pasaje Nieto 89

NUMBER OF STORIES: 5 BASEMENTS: HEIGHT: 13 m BUILDING AREA: 425 m^2

STRUCTURAL DESIGN:
WORK PERMIT : 1962
FINAL RECEPTION : November 1963

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION:
PARTITIONS :

CONCRETE: R_{28} = kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS:

DATA SHEET NUMBER: 171

BUILDING: Covadonga
ADDRESS : 1 Poniente 1255

NUMBER OF STORIES: 5 BASEMENTS: 1 HEIGHT: 13.3 m BUILDING AREA: 1,213 m^2

STRUCTURAL DESIGN:
WORK PERMIT : December 1972
FINAL RECEPTION : March 1975

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Continuous footing
PARTITIONS :

CONCRETE: R_{28} = 225 kg/cm^2 STEEL : A44-28H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS: There are five identical buildings.

DATA SHEET NUMBER: 172

BUILDING: Cooperative Benidorm
ADDRESS : Subida Los Lirios 1570

NUMBER OF STORIES: 5 BASEMENTS: HEIGHT: 13.0 m BUILDING AREA: m^2

STRUCTURAL DESIGN:
WORK PERMIT : August 1979
FINAL RECEPTION : February 1980

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Continuous footings
PARTITIONS : Brick masonry

CONCRETE: R_{28} = 300 kg/cm^2 STEEL : A63-42H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS: There are six identical buildings of type C.

DATA SHEET NUMBER: 173

BUILDING: Pagoda
ADDRESS : Libertad 412

NUMBER OF STORIES: 5 BASEMENTS: HEIGHT: 13.0 m BUILDING AREA: 1,499 m^2

STRUCTURAL DESIGN:
WORK PERMIT : August 1962
FINAL RECEPTION : July 1963

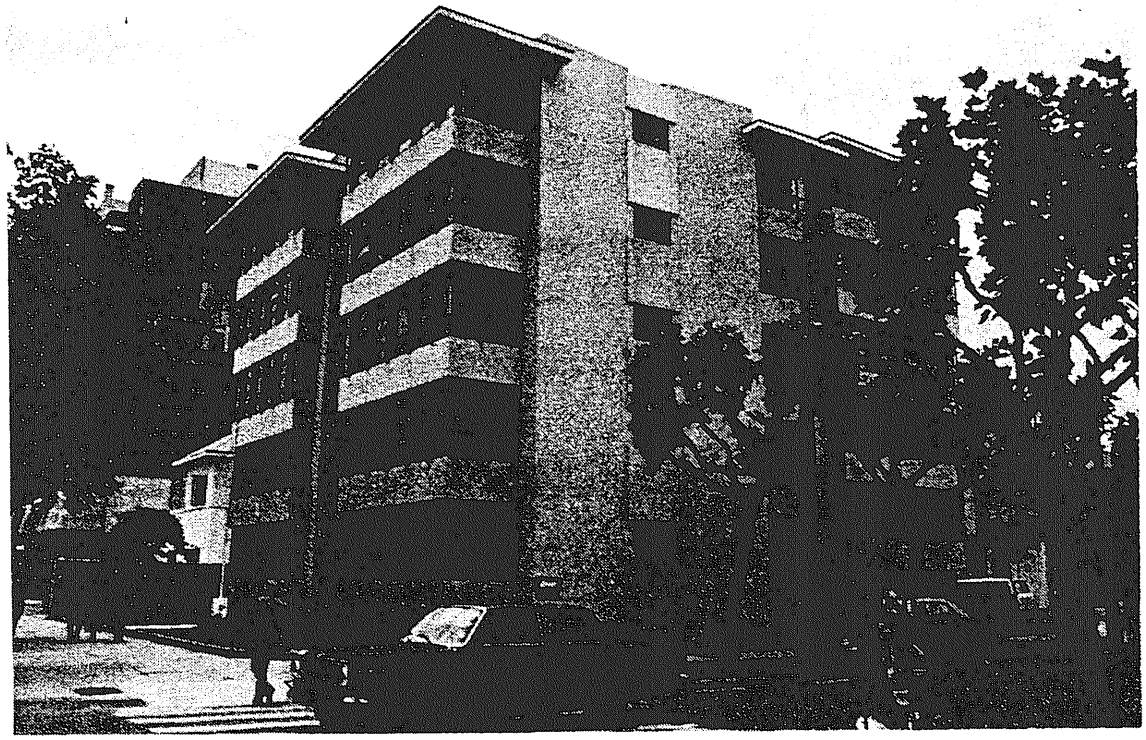
FRAMING SYSTEM :
TYPE OF FOUNDATION:
PARTITIONS : Hollow brick

CONCRETE: R_{28} = 225 kg/cm^2 STEEL : A56-35

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO _X_ LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO ___ LIGHT _X_ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS:



DATA SHEET NUMBER: 174

BUILDING: Montegrande
ADDRESS : Traslaviña 278

NUMBER OF STORIES: 5 BASEMENTS: HEIGHT: 13.0 m BUILDING AREA: 3,303 m^2

STRUCTURAL DESIGN:
WORK PERMIT : December 1962
FINAL RECEPTION : October 1968

FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION:
PARTITIONS :

CONCRETE: R_{28} = kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS:

DATA SHEET NUMBER: 175

BUILDING: Conjunto Habitacional Limache
ADDRESS : Limache 1514-1558

NUMBER OF STORIES: 5 BASEMENTS: HEIGHT: 13 m BUILDING AREA: 1,103 m^2

STRUCTURAL DESIGN: February 1980
WORK PERMIT : June 1981
FINAL RECEPTION : October 1981

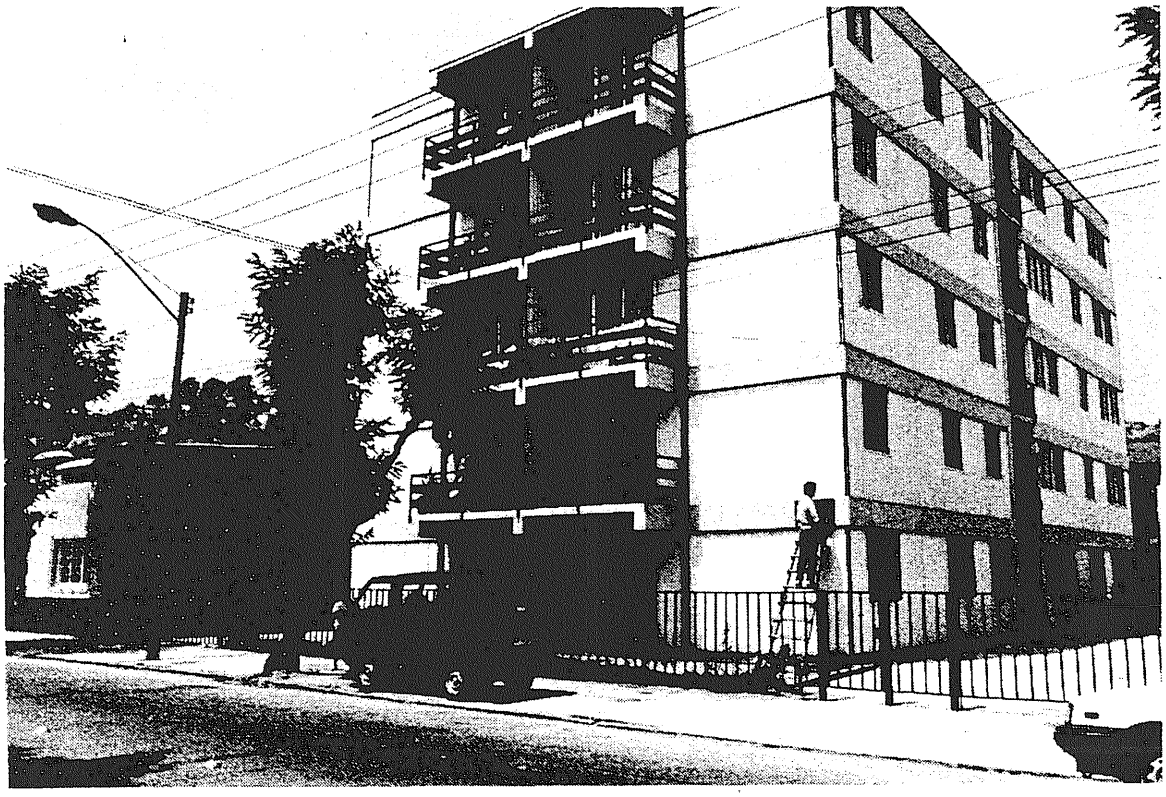
FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION: Continuous footing
PARTITIONS : Volcanita

CONCRETE: R_{28} = 180 kg/cm^2 STEEL : A44-28H

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE :	NO	X	LIGHT	___	MODERATE	___	SEVERE ___
NONSTRUCTURAL DAMAGE:	NO	X	LIGHT	___	MODERATE	___	SEVERE ___
COST OF REPAIR :	$						

OBSERVATIONS: Six buildings in the complex.



DATA SHEET NUMBER: 176

BUILDING: Agua Santa
ADDRESS : Alvarez 32

NUMBER OF STORIES: 14 BASEMENTS: 1 HEIGHT: 38.9 m BUILDING AREA: 5,570 m^2

STRUCTURAL DESIGN:
WORK PERMIT : September 1979
FINAL RECEPTION : May 1980

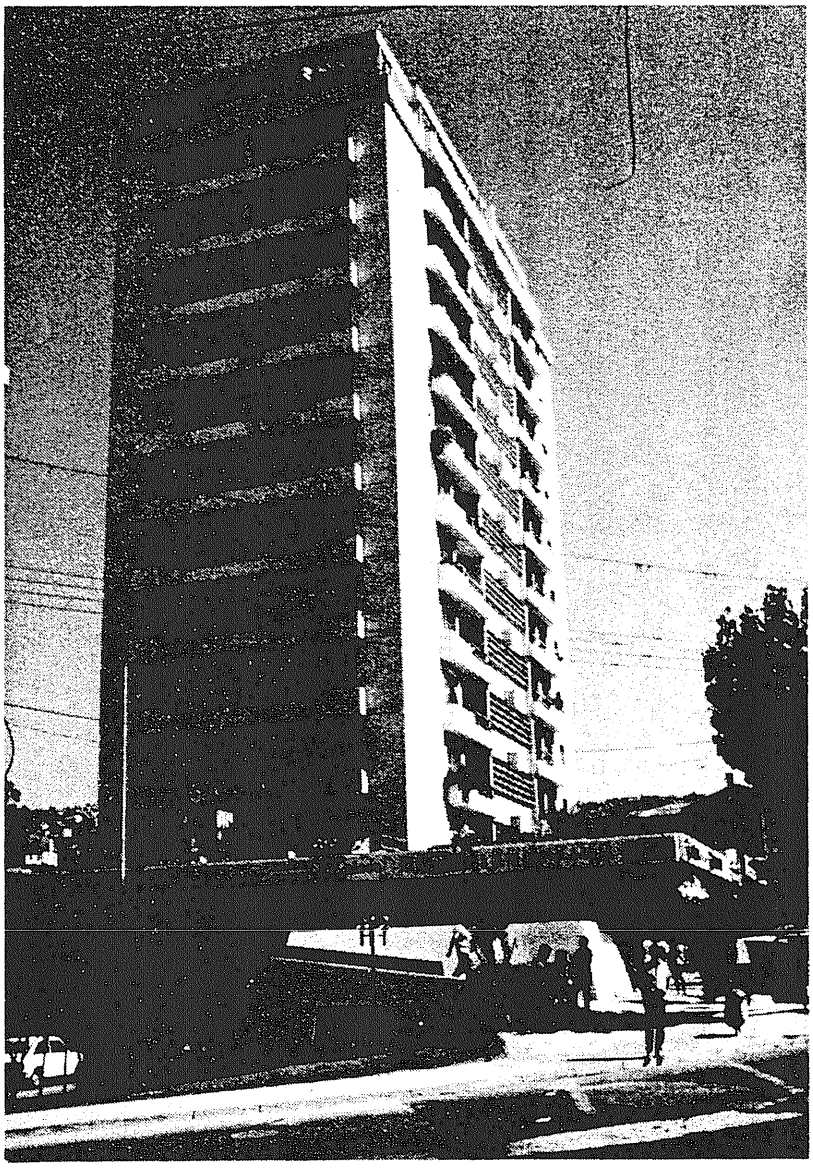
FRAMING SYSTEM : Structural walls
TYPE OF FOUNDATION:
PARTITIONS : Bepolit or similar

CONCRETE: R_{28} = 300 kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : S

OBSERVATIONS: Commercial plaza in first story.



DATA SHEET NUMBER: 177

BUILDING: Santillana del Mar
ADDRESS : Avenida Peru 464

NUMBER OF STORIES: 10 BASEMENTS: HEIGHT: 29 m BUILDING AREA: 2,040 m^2

STRUCTURAL DESIGN:
WORK PERMIT : 1961
FINAL RECEPTION : October 1964

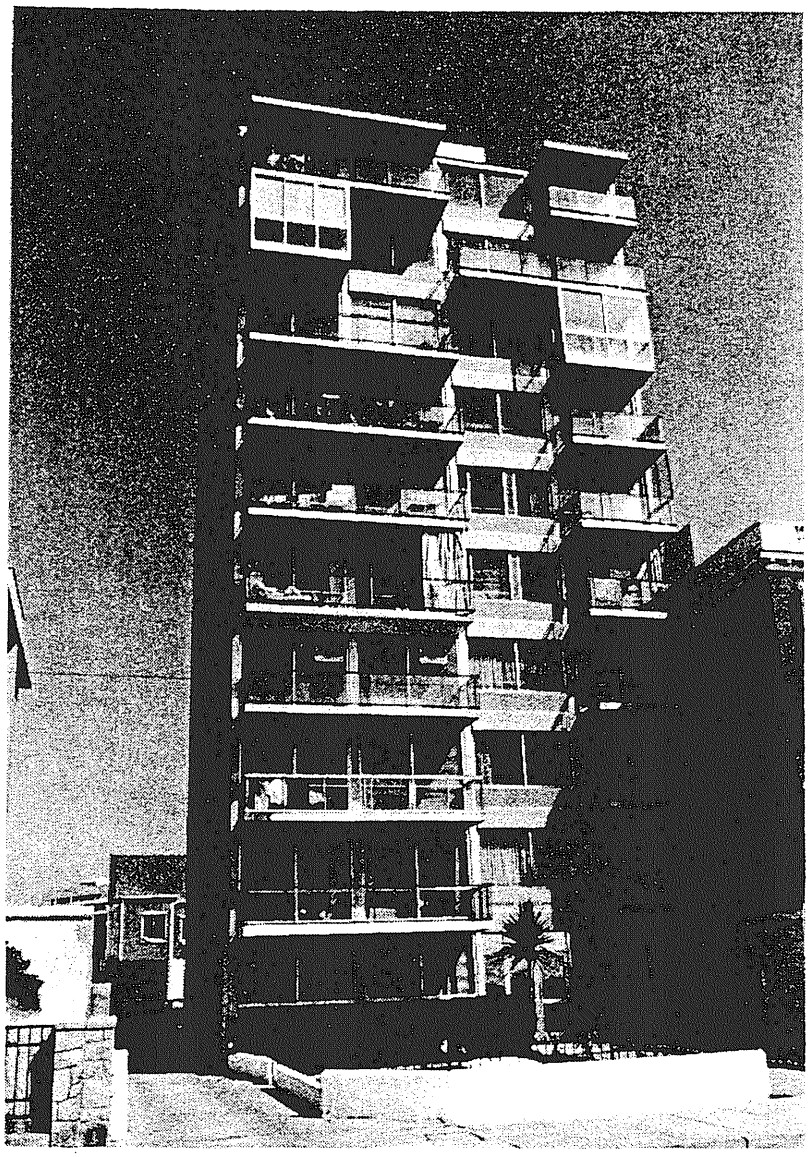
FRAMING SYSTEM : Reinforced concrete walls and masonry
TYPE OF FOUNDATION:
PARTITIONS : Brick pandereta

CONCRETE: R_{28} = kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO ___ LIGHT X MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO ___ LIGHT X MODERATE ___ SEVERE ___
COST OF REPAIR : $ 1,175,056

OBSERVATIONS: "U" shaped plan of building.



DATA SHEET NUMBER: 178

BUILDING: Tivoli
ADDRESS : Marina 154

NUMBER OF STORIES: 9 BASEMENTS: 1 HEIGHT: 24 m BUILDING AREA: 2,278 m^2

STRUCTURAL DESIGN:
WORK PERMIT : 1962
FINAL RECEPTION : July 1967

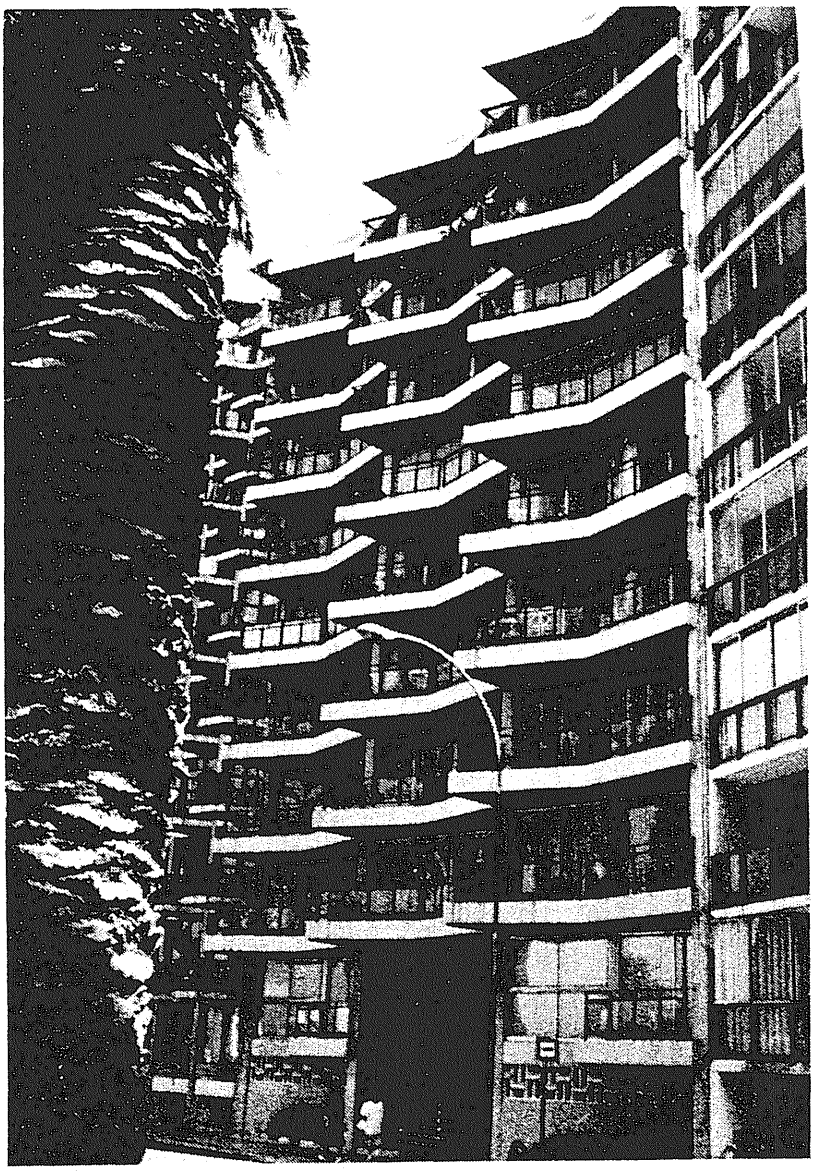
FRAMING SYSTEM :
TYPE OF FOUNDATION:
PARTITIONS : Brick masonry

CONCRETE: R_{28} = kg/cm^2 STEEL :

ALLOWABLE SOIL PRESSURES STATIC: kg/cm^2 DYNAMIC: kg/cm^2

STRUCTURAL DAMAGE : NO X LIGHT ___ MODERATE ___ SEVERE ___
NONSTRUCTURAL DAMAGE: NO X LIGHT ___ MODERATE ___ SEVERE ___
COST OF REPAIR : $

OBSERVATIONS:



APPENDIX B

ALPHABETICAL INDEX OF BUILDINGS

ALPHABETICAL INDEX OF BUILDINGS

BUILDING	ADDRESS	NUMBER OF STORIES	DATA SHEET NUMBER
1 ORIENTE 87	1 ORIENTE 87	5	142
ACAPULCO	SAN MARTIN 821	15	9
ACHAO	8 NORTE S/N	8	88
AGUA SANTA	ALVAREZ 32	14	176
ALIAMAPU	ARLEGUI 547	10	52
ALTAMAR	SAN MARTIN 575	9	57
ALVAREZ	ALVAREZ 660	7	98
AMERICA	ARLEGUI 580	9	73
ANCONA	7 NORTE 65	9	61
ANDES	VALPARAISO 122	7	110
ANGAMOS	ANGAMOS 460-480	5	144
ANGELMO	7 NORTE 476	10	32
ANTILCO	5 NORTE 161-169	9	65
ANTUMALAL	AV. PERU 680	10	40
ARCADIA	ARLEGUI 440	9	53
ARLEGUI	ARLEGUI 645	10	39
ARMINSA	LIBERTAD 529	9	77
ARRECIFES	2 PONIENTE 510	7	111
ARUBA	2 PONIENTE 659	6	123
ATALAYA	AV. PERU 590	12	19
AVENIDA PERU	AV. PERU 548	7	115
BABURIZZA	ARRIETA 698	7	116
BAGNARA	VILLANELO 56	5	148
BARRIOS	2 NORTE 1134	5	163
BANCO CONCEPCION	ECUADOR 112	6	121
BANCO DE CREDITO E INVERSIONES	ECUADOR 182	8	81
BANCO DEL ESTADO	VILLANELO 24	6	120
BANCO DEL TRABAJO	ARLEGUI 211	6	119
BANCO ESPAÑOL CHILE	ARLEGUI 682	9	55
BONANZA	AV. BORGOÑO 21711	5	164
BONANZA	3 NORTE 580	7	109
BRASILIA	ETCHEVERS 268	9	75
CALETA ABARCA	TORO HERRERA 307	6	125
CANAL BEAGLE H.A.	POB. CANAL BEAGLE	5	168
CANAL BEAGLE J5	POB. CANAL BEAGLE	5	169
CANAL BEAGLE K5	POB. CANAL BEAGLE	5	167
CAPRI	SAN MARTIN 563	8	91
CASTILLA	VALPARAISO 426	9	70
CENTRO MAR	SAN MARTIN 605	11	28
CONJUNTO HABITACIONAL LIMACHE	LIMACHE 1558-1514	5	175
CONJUNTO HABITACIONAL LIMACHE	LIMACHE 1967	7	108
COOPERATIVE BENIDORM	COOP. BENIDORM	5	172
COOPERATIVE BENIDORM	COOP. BENIDORM	6	134
COPACABANA	MARINA 84	10	49
CORAL	SAN MARTIN 928	12	20
CORI	DIEGO PORTALES 916	8	89
COSTA AZUL	MURPHY 321	8	87
COUSIÑO	ALVAREZ 186	6	122
COUVE	PLAZA SUCRE 220	7	100
COVADONGA	VILLANELO 158	5	141
COVADONGA	1 PONIENTE 1255	5	171
CRISOL	3 PONIENTE 654	8	83
DALCAHUE	8 1/2 NORTE S/N	9	79
DANUBIO	2 ORIENTE 281	10	35
DINAMARCA	VALPARAISO 483	8	82
DON BENJAMIN - DOÑA ROSA	2 ORIENTE 610-628	10	47
DON JOSE	2 NORTE - LIBERTAD	14	12
ECUAMAR	ECUADOR 130	10	33
EIMAR	2 PONIENTE 545	5	166
EL CIPRES	5 NORTE 560	7	99
EL ESCORIAL	PLAZA VERGARA 177	10	34
EL FARO (REÑACA)	LA JOYA 109	9	66
EL FARO (VIÑA)	MARINA 70	9	76
EL MAR	VICUÑA MACKENNA S/N	9	60
EL MARQUES	8 NORTE 779	8	90

ALPHABETICAL INDEX OF BUILDINGS (cont.)

BUILDING	ADDRESS	NUMBER OF STORIES	DATA SHEET NUMBER
EL RECREO	SUB. CONDELL 38	9	67
ESMERALDA	ARLEGUI 473	6	136
EUROSOL	BORGOÑO 15645	6	118
FAURA	3 NORTE 131	5	149
FENIX	LIBERTAD 733	7	114
FESTIVAL	9 NORTE 450	14	13
FLAMINGO	VALPARAISO 169-175	10	36
FLORIDA	8 NORTE 250	7	107
FONTANA	2 NORTE 17	9	64
GALERIA LIBERTAD CENTRO	LIBERTAD 466/ 6 NORTE	13	16
GELLONA	MARINA 66	7	113
GRAN PRIX	3 NORTE 936	9	80
HANGA ROA	SAN MARTIN 925	15	11
HONOLULU	2 NORTE 360	6	124
HOTEL O'HIGGINS	PLAZA VERGARA S/N	5	140
HOTEL SAN MARTIN	SAN MARTIN 667	7	96
ISAMAR	SAN MARTIN 236	10	38
ISCAVAS	VILLANELO 183	7	112
ITALIA	VALPARAISO 230	10	44
ITALIA	VALPARAISO 230	10	45
JOSE FRANCISCO VERGARA	PLAZA PARROQUIA 325	12	18
LAS ACHIRAS	3 NORTE 444	9	68
LAS BRISAS	6 NORTE 24	7	104
LAS BRISAS	AV. BORGOÑO 14755	4	179
LAS PALMAS	MARINA 80	10	48
LAS TERRAZAS	5 PONIENTE 336	9	59
LAS TORCAZAS	ALVAREZ 1214	7	105
LAUTARO I	ARLEGUI 160	9	72
LIGURIA	2 NORTE 279	5	147
LIMARI	ETCHEVERS 49	10	46
LOS ALAMOS	3 NORTE 207	9	58
LOS OLMOS	LOS OLMOS 11-33	5	158
MALAU TARU	ECUADOR 116	6	126
MALLORCA	2 NORTE 660-680	9	69
MAR DE CHILE	CALLE 1-2411	6	133
MAR DEL SUR	ALVAREZ 58	16	8
MARINA	MARINA 94	9	62
MARINA REAL	SAN MARTIN 880	20	6
MARRACHINI	6 PONIENTE 372	7	97
MAYA	SAN MARTIN 458	11	26
MEDITERRANEO	4 NORTE - 1 ORIENTE	12	21
MERANO	8 NORTE 846	6	135
MIAMI	MARINA 154	10	37
MILLAHUE	2 NORTE 41	10	51
MILLALEBU	MARINA 156	11	31
MIRADOR	MARINA 72	11	29
MONACO	4 NORTE 612	6	137
MONTE CARMELO	4 NORTE 675	10	50
MONTECARLO	6 NORTE 241-289	8	84
MONTEGRANDE	TRASLAVIÑA 278	5	174
NAUTICO	AV. BORGOÑO 21659	5	145
NIETO	PSJE. NIETO 89	5	170
NIZA	6 PONIENTE 220	7	106
NUEVO CENTRO 1	LIBERTAD 13-17	11	25
NUEVO CENTRO 2	LIBERTAD 39-67	6	128
O'HIGGINS	ARLEGUI 734	14	15
PAGODA	LIBERTAD 412	5	173
PALERMO	4 PONIENTE 345	6	138
PLAZA	PLAZA VERGARA 60	11	22
PLAZA DEL MAR	SAN MARTIN 787	23	1
PLEAMAR	IGNACIO CARRERO PINTO 150	5	146
PLENO MAR	SUB. CONDELL 62	9	78
POBLACION EMPART	15 NORTE 1027	5	157
POBLACION EMPART	15 NORTE 1003	5	155
POBLACION EMPART	15 NORTE 1027	5	154

ALPHABETICAL INDEX OF BUILDINGS (cont.)

BUILDING	ADDRESS	NUMBER OF STORIES	DATA SHEET NUMBER
POBLACION EMPART	15 NORTE 1045-1067-1093	5	156
POBLACION LORD COCHRANE	CAMINO REAL	6	132
POBLACION LORD COCHRANE	CAMINO REAL	5	152
POBLACION LORD COCHRANE	CALLE SIN SALIDA 1450	8	92
POBLACION LORD COCHRANE	CAMINO REAL	5	151
POBLACION LORD COCHRANE	BARROS ARANA 715-795	8	94
POBLACION LORD COCHRANE	CAMINO REAL	6	131
POBLACION LORD COCHRANE	CALLE SIN SALIDA 1450	8	95
POBLACION LORD COCHRANE	CALLE SIN SALIDA S/N	5	150
POBLACION LORD COCHRANE	CALLE SIN SALIDA 1450	8	93
POBLACION LORD COCHRANE	M. RODRIGUEZ 1423-1563	5	153
POBLACION LORD COCHRANE	CALLE SIN SALIDA S/N	6	129
POBLACION LORD COCHRANE	CAMINO REAL	6	130
POBLACION LOS LIMONALES	LOS LIMONALES	5	162
POBLACION LOS LIMONALES	LOS LIMONALES	5	161
PONTECASINO	MARINA 110	11	23
PORTAL ALAMO	VALPARAISO 507	21	4
PRUNOTTO	VALPARAISO 279	5	159
PUESTA DE SOL	ECUADOR 23	14	14
QUINTA CLAUDE	ALVAREZ 1926-2052	23	2
RAPA NUI	MARINA 198	10	43
RAPALLO	ETCHEVERS 229	9	54
REÑACA PLAYA CLUB	BORGOÑO - ANGAAMOS	6	127
RIVIERA	3 NORTE 60	9	71
ROTONDA	SAN MARTIN 160-172	8	86
SAN ANTONIO CENTRO	11 NORTE - SAN ANTONIO	9	56
SAN JOSE	ALVAREZ 247	5	160
SANTILLANA DEL MAR	AV. PERU 464	10	177
SAUSALITO	7 NORTE 52	9	63
SOLIMAR	SAN MARTIN 120	11	24
SOTAVENTO	AMUNATEGUI 1585	7	103
TAHITI	SAN MARTIN 972	15	10
TIVOLI	MARINA 154	9	178
TORRES DE MIRAMAR	SAN MARTIN 1020 Y 1080	21	5
TORRES DEL PACIFICO	SAN MARTIN 1130-1206-S/N	17	7
TORRES DEL SOL	8 NORTE 310-330	22	3
TOSSA DEL MAR	AV. PERU 444	11	27
ULTRAMAR	8 NORTE 250	10	41
VERDE MAR	3 NORTE - 4 PONIENTE	5	143
VERONA	SAN MARTIN 734	7	102
VIANA	VIANA 345	9	74
VICUÑA MACKENNA	PLAZA VERGARA	13	17
VILLA ANAKENA	23 NORTE 950-1050	5	139
VILLA REAL	4 PONIENTE 390	10	42
VILLA SOFIA	SAN JOSE ORIENTE 277	11	30
VIÑA OESTE	2 PONIENTE 471	7	117
VIÑA RIO	3 NORTE 834	7	101
VIÑA SOL	5 NORTE 531	5	165
VON SCHROEDERS	ALVAREZ - VON SCHROEDERS	8	85

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